

Project Manual

Bid No. 22-20

Town of Arlington

Stratton School, Bishop School, and Peirce School Playgrounds

Arlington, Massachusetts

AWARDING AUTHORITY

TOWN OF ARLINGTON

acting through and by its

TOWN MANAGER

Town Hall Annex 730 Massachusetts Ave.
Arlington, MA 02476

April 20, 2022

Prepared by:

LANDSCAPE ARCHITECT

Warner Larson Landscape Architects
130 West Broadway
Boston, MA 02127
(617) 464-1440

Rule for Award**PROJECT INFORMATION**

The contract shall be awarded to the responsible and responsive Bidder submitting the lowest total price. The lowest total price will consist of the Base Bid plus the selected Add Alternates in the order they are provided in the bid package. The contract will be awarded within ninety (90) days after the bid opening. The time for award may be extended for up to 45 additional days by mutual agreement between the Town and the apparent lowest responsive and responsible bidder.

BACKGROUND

PROJECT INFORMATION	
Managing Town Department:	Recreation Department
Project Manager:	Joe Connelly, Director
Project Manager Email:	jconnelly@town.arlington.ma.us
Designer:	Warner Larson Landscape Architects
Designer Contact:	Emily Hunt, ehunt@warnerlarson.com
Project Address:	Stratton School: 180 Mountain Ave, Arlington, MA 02474 Bishop School: 25 Columbia Road, Arlington, MA 02474 Peirce School: 85 Park Avenue Extension, Arlington, MA 02472
Brief Project Description:	The scope of work includes playground improvements at 3 locations: Stratton School, Bishop School and Peirce School. The Base Bid includes improvements to the three existing playgrounds replacing play equipment, safety surfacing and site furnishings. At Bishop and Peirce Schools, improvements include improvements to basketball courts.
Estimated Project Cost:	\$2,100,000.00
PROJECT SCHEDULE	
Bid Opening Date:	5/11/2022
Estimated Award Date:	6/11/2022
Estimated Start Date:	6/20/2022
Date of Substantial Completion:	10/1/2022
Date of Final Completion:	11/1/2022

MINIMUM QUALITY REQUIREMENTS

Quality requirements, or basic business requirements, are the minimum set of standards that an entity must meet and certify to be considered responsible and responsive. **Please complete the Quality Requirements form, below, and submit it with your completed bid.** The Town of Arlington will disqualify any response that does not meet the minimum quality requirements. A "No Response" to items 1 or 2, or a failure to respond to any of the following minimum standards may result in disqualification of your bid.

QUALITY REQUIREMENTS		Yes	NO
1.	Has the contractor been established in this specified field for at least 5 years?		
2.	Has the contractor successfully completed a minimum of three (3) similar sized Municipal Park projects (over \$500,000) within the past five (5) years?		

In order to provide verification of affirmative responses to items 1 or 2 under the quality requirements listed in the Quality Requirements Form, Offeror must submit written information that details the general background, experience, and qualifications of the organization. Subcontractors, if applicable, must be also included.

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INVITATION TO BID

Sealed Bids for construction of:

**Stratton School
Playground Improvements**
180 Mountain Ave
Arlington, MA 02474

**Bishop School
Playground Improvements**
25 Columbia Road
Arlington, MA 02474

**Peirce School
Playground Improvements**
85 Park Avenue Extension
Arlington, MA 02474

in accordance with Contract Documents prepared by:

Warner Larson Landscape Architects
130 West Broadway
Boston, MA 02127

hereinafter called the "Landscape Architect", will be received by:

Town of Arlington
acting by and through its
Town Manager: Mr. Adam Chapdelaine

hereinafter called the "Awarding Authority", or "Owner" at:

Purchasing Department
Town Hall Annex
730 Massachusetts Ave.
Arlington, MA 02476
Attention: Town Manager Mr. Adam Chapdelaine

BID No. 22-20 – STRATTON SCHOOL, BISHOP SCHOOL, AND PEIRCE SCHOOL PLAYGROUNDS

Sealed bids for Stratton School, Bishop School, and Peirce School Playgrounds for the Town of Arlington, Massachusetts, will be received at the Purchasing Department, 730 Massachusetts Avenue, Arlington, MA 02476 until 10:00 AM prevailing time, on Wednesday, May 11, 2022 at which time and place said bids will be publicly opened and read aloud.

All bids must be in a sealed envelope plainly marked:

BID No. 22-20 – STRATTON SCHOOL, BISHOP SCHOOL, AND PEIRCE SCHOOL PLAYGROUNDS

The scope of work includes playground improvements at 3 locations: Stratton School, Bishop School and Peirce School. The Base Bid includes improvements to the three existing playgrounds replacing play equipment, safety surfacing and site furnishings. At Bishop and Peirce Schools, improvements include improvements to basketball courts.

Bid Security in the form of a bid bond, cash, certified check, treasurer's, or cashier's check payable to the Owner, is required in the amount of five percent of the bid, in accordance with Division 00 Section, INSTRUCTIONS TO BIDDERS.

INVITATION TO BID

The contract duration for the Base Bid is 185 consecutive days.

Contract Documents including Project Manual (Specifications) will be available for download from the Town's purchasing website at: www.arlingtonma.gov/purchasing on Wednesday, April 20, 2022, at 9:00 AM.

Contract Documents and plans will not be mailed.

A pre-bid conference will be held on Wednesday, April 27, at 10:00 AM. The pre-bid conference will be held on-site at Peirce Playground and will then travel to Stratton (10:30 am) and Bishop (11:00 am) in Arlington.

Questions should be directed to Emily Hunt at Warner Larson Landscape Architects via email: ehunt@warnerlarson.com and will be accepted until Wednesday, May 4, 2022, at 12:00 PM. Responses will be posted on the Town's purchasing website by end of the day Friday, May 6, 2022.

The selected contractor shall furnish a performance bond and a payment bond in amount at least equal to one hundred percent (100%) of the contract price as stipulated in Section 00 72 00 GENERAL CONDITIONS of these specifications.

By-Law of the Town of Arlington, Title 1, Article 16, Minority/Woman Workforce Participation in

Construction Projects which exceeds \$200,000.00 is part and parcel of the bid.

Minimum Wage Rates as determined by the Commissioner of the Division of Occupational Safety of the Executive Office of Labor and Workforce Development under the provisions of the Massachusetts General Laws Chapter 149, Section 26 to 27D, as amended, apply to this project. It is the responsibility of the Bidder, before bid opening, to request, if necessary, any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed work under this contract.

All bids for this project are subject to applicable bidding laws of Massachusetts, including General Laws Chapter 30, Section 39M as amended.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 working days, Saturdays, Sundays, and legal holidays excluded after the opening of bids.

The Owner reserves the right to waive any informalities or to reject any or all bids.

TOWN OF ARLINGTON
acting through and by its
TOWN MANAGER
Adam W. Chapdelaine

INVITATION TO BID

INSTRUCTIONS TO BIDDERS

1.0 COMPLEMENTARY DOCUMENT

- A. INVITATION TO BID, including herewith, is complementary to this document and shall be reviewed by bidder for specific instruction which are not repeated herein.

2.0 STATUTES REGULATING COMPETITIVE BIDDING

- A. Bidding procedures and award of general contract and subcontracts shall be in accordance with the provisions of Chapter 30, Section 39M and Chapter 149, Section 44A through 44L inclusive, of the General Laws of the Commonwealth of Massachusetts, including all current amendments.
- B. In the event of any discrepancy or inconsistency between the provisions of these Bid and Contract Documents and the above-mentioned statutes, the provisions of the above-mentioned statutes shall govern. In such event, the application of all remaining provisions not in conflict to any circumstance other than that in which the conflict occurs shall not be affected thereby.

3.0 BIDDER'S QUALIFICATIONS

- A. DCPO Certification not required.
- B. The Contractors' Update Statements are not public records and will not be open to public inspection.

4.0 INTERPRETATION OF DOCUMENTS: NOTIFICATION OF ERRORS

- A. Interpretations of the provisions of the Bid and Contract Documents will be made by the designer upon written request of any general bidder or sub-bidder, provided that such request is received by the Designer at least seven (7) days prior to the date of the applicable bid opening, and that the Designer considers such interpretation to be of sufficient importance. Oral or telephone interpretations will not generally be made, and if made shall be strictly informal and not legally valid or binding.
- B. Such written interpretations shall be in the form of Addenda to the Bid and Contract Documents.
- C. Bidders are urged to communicate all errors and discrepancies found in the Bid and Contract Documents to the Designer. Telephone calls pointing out any such errors or discrepancies will be taken by the Designer, but only for the purpose of receiving the information in order that it may be properly processed, and not for interpretation or clarification.

5.0 EXAMINATION OF BIDDING AND CONTRACT DOCUMENTS

- A. Each Bidder shall carefully examine the Bid and Contract Documents to obtain a thorough understanding of the work of his bid in addition to the work of related trades. In addition,

INVITATION TO BID

each General Bidder shall personally visit the site to thoroughly acquaint himself/herself with the conditions as they exist hereon.

- B. Failure of any Bidder to thoroughly examine the Bid and Contract Documents or to visit and examine the site shall in no way relieve him/her of any obligation with respect to his/her bid or of any responsibility assigned to him under the Contract.

6.0 PRE-BID SITE VISITS

- A. Pre-bid site visits will be held on Wednesday, April 27, at 10:00 AM.
- B. The pre-bid site visits will be held on-site at Peirce School at 10:00 am (85 Park Avenue Extension) and will then travel to Stratton School at 10:30 am (180 Mountain Ave) and travel to Bishop School at 11:00 am (25 Columbia Road) in Arlington.

7.0 MODIFICATION AND WITHDRAWAL OF BIDS

- A. Modification of withdrawal of Bids will be permitted after the submission of such bids provided clearly written, readily understandable instructions for same are received by the Owner in writing prior to the time established for opening of such bids. No Bid may be withdrawn after that time, except as otherwise provided herein or by law.

8.0 ADDENDA

- A. Addenda may be required during the bidding period to modify, clarify, or interpret the Bid and Contract Documents. The Contractor is responsible for downloading Addendum from the Town's purchasing website at: www.arlingtonma.gov/purchasing.
- B. Failure to receive such Addend shall in no way relieve any bidder from the execution of its provisions. All bidders are cautioned to verify the number of Addenda which have been issued and to secure any needed copies from the Designer before submitting their Bid.

9.0 FORM FOR BIDS

- A. The Owner will make available to every person applying therefor, a Bid Form. Each bona fide Bidder will be furnished forms for his proposal upon request. Such forms will be made available at the Owner's office during the regular office hours throughout the bidding period. Bids must be submitted on the forms provided by Owner or of forms included in the bid documents of the Project Manual.
- B. All blank spaces provided on the bid forms shall be filled in with ink or typewriter. Where space is provided, sums shall be expressed in both words and figures. In case of a discrepancy between the two, the written words shall govern.
- C. No interlineations, additional, alterations or erasures shall be made on the forms.

10.0 SUBMISSION OF BIDS

- A. The Bid Form shall be properly executed and enclosed with the required bid deposit in a sealed envelope plainly marked on the outside with the following information.

INVITATION TO BID

Bid For:

SUBMITTED BY:

(Name of Bidder) (Address of Bidder)

- B. If Bids are mailed; the above required envelope shall be enclosed in a second envelope identified with the above markings and mailed to the place of bid opening, as described in the Invitation to Bid. Mailed Bids must be received before the time scheduled for opening of Bids.

11.0 PERFORMANCE AND PAYMENT BONDS

- A. The Performance and Labor and Materials Payment Bonds required of the General Contractor shall each be in the amount of 100% of the contract sum from a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and approved by the Owner.

12.0 FOREIGN CORPORATIONS

- A. The attention of bidders is called to General Laws, Chapter 30, Section 39L, as amended by Acts of 1967, Chapter 3, under which the Owner may not enter into a contract with a foreign corporation as a subcontractor unless the foreign corporation has filed with the Owner a certificate by the State Secretary stating that the foreign corporation has complied with General Laws Chapter 181, Sections 3 and 5 and stating the date of such compliance.

13.0 AWARD OF CONTRACT

- A. The Contract will be awarded to the lowest responsible and eligible bidder except in the event of a substitution as provided by under Chapter 149, Sections 44E and 44F of the above-reference General Laws.

14.0 COMMENCEMENT AND COMPLETION OF WORK

- A. The successful bidder, upon completion of the Contract Agreement, shall commence the work of the Contract within seven (7) calendar days from receipt of written Notice to Proceed issued by the Owner within fourteen (14) calendar days after said execution of the Contract Agreement and shall therefore diligently and continuously carry on the work in such manner as to substantially complete the work on or before October 1, 2022, except as noted herein.

15.0 LIQUIDATED DAMAGES

- A. The attention of bidders is particularly called to the requirements as to the conditions of employment to be observed, the minimum wage rates to be paid under the Contract and affirmative action to ensure equal employment opportunity.

INVITATION TO BID

- B. Contractor shall make full good faith efforts to secure at least ten percent (10%) of the Labor and Materials incorporated in the Work from Minority Business Enterprises and five percent (5%) of the Labor and Materials incorporated in the Work from Women Business Enterprises certified by the Commonwealth of Massachusetts and consistent with the Federal Equal Employment Opportunity requirements attached hereto as Attachment A. Satisfactory documentation of such effort shall be furnished promptly upon request by Owner.
- C. The Owner is an equal employment opportunity employer and has an active Affirmative Action Plan (AAP). For more information, direct correspondence to Patricia M. Libby, Affirmative Action Officer for the Town of Arlington.

BID FORM

For: **Stratton School, Bishop School and Peirce School Playgrounds**

Proposal (BID) of _____

(hereinafter called "Bidder") a corporation, organized and existing under the laws of the
Commonwealth of Massachusetts.

doing business as: _____
(corporation, proprietorship, partnership)

to the TOWN OF ARLINGTON hereinafter called "Owner".

- A. The Bidder, in compliance with your invitation for bids for the Stratton School, Bishop School and Peirce School Playgrounds, Arlington Massachusetts, having examined the plan and specifications with related documents and the site of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in the written "Notice to Proceed" from the Owner, and to complete the work by **November 1, 2022**. The Bidder further agrees to pay as liquidated damages, the sum of \$100.00 for each consecutive calendar day thereafter that the works remains incomplete, as provided in the Instruction to Bidders, Modifications to General Conditions. Required completion dates are as follows:

- B. Bidder agrees to perform all work described in the specifications and shown on the drawings, for the following lump sum price of:

1. Total Proposed Base Bid Contract Price:

_____ Dollars (\$_____)

The form of _____ is submitted herewith in accordance with the INSTRUCTION FOR BIDDERS and is to become property of the Owner in the event the Contract and bonds are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

2. The Bid does not include premiums on Performance/Labor and Materials Bond. Cost of required Bond Premiums:

Bid Premiums Add \$ _____

3. In addition to the Base Bid work, the Bidder proposes the following prices for the Deduct Alternate items, as described on the plans and in Specification Section 01 23 00, ALTERNATES.

- a. Total Bid for Alternative #1:

_____ Dollars (\$_____)

b. Total Bid for Alternative #2:
_____ Dollars (\$_____)

c. Total Bid for Alternative #3:
_____ Dollars (\$_____)

4. The Supplemental Unit Prices set forth herein shall be used to determine any equitable adjustment of the Contract in connection with the changes or extra work performed under this Contract as directed by the **Town of Arlington**.

It is mutually understood and agreed that such Supplemental Unit Prices include all items of costs, equipment, taxes, and insurance of every kind, overhead, and profit for the **Contractor** and they shall be used uniformly, without modification for addition and deductions. Prices listed under ADDITIONS and DEDUCTIONS are to be the complete total price billed to and paid by the **Town of Arlington** therefor. There can be no more than fifteen (15) percent difference in price between the additions and deductions.

SUPPLEMENTAL UNIT PRICES FORM				
ITEM DESCRIPTION (All references to items shall correspond to work as described in the relevant portions of the Construction Documents.)		UNIT	COST	APPROVED
1	Construction fencing	LF	\$	
8	Ordinary borrow/clean fill, complete in place	CY	\$	
3	Gravel borrow, complete in place	CY	\$	
4	Base drainage stone for poured in place rubber, in place	CY	\$	
5	Dense graded gravel, complete in place	CY	\$	
6	3/4" Crushed stone/drainage stone, complete in place	CY	\$	
7	Clean screened loam, complete in place	CY	\$	
8	Asphalt walk paving, per detail and specification	SF	\$	
9	Vehicular asphalt paving			
10	4" reinforced concrete paving, complete in place including base and subbase preparation & broom finish	SF	\$	
11	Poured-in-place rubber surfacing installed per detail and specification	SF	\$	
12	Lawn seed & loam, per detail and specification	SF	\$	

SPY POND PARK & PARMENTER SCHOOL PLAYGROUND
IMPROVEMENTS ARLINGTON, MA

- C. If the Bid is accepted by the Owner, the undersigned agrees to complete the entire work provided to be done under the contract within the time stipulated by the Owner.
- D. The undersigned agrees that for extra work, if any, performed in accordance with the AGREEMENT, he will accept compensation as stipulated therein in full payment for such extra work.
- E. Bidder understands that the Owner reserves the right to reject any and all bids.
- F. The undersigned hereby agrees that he will not withdraw the Bid within sixty (60) consecutive calendar days after the actual date of the opening of Bids and that, if the Owner accepts this Bid, the undersigned will duly execute and acknowledge the required Contract Bonds within 10 days after notification that the AGREEMENT is ready for signature.
- G. Should the undersigned fail to fulfill any of his agreements as here in before set forth, the Owner shall have the right to retain as liquidated damages the amount of the Bid security, which shall become the Owner's property. If a bid was furnished as bid security, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety.
- H. The Undersigned certifies under penalty of perjury that this Bid is in all respect bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the "person" shall mean natural person, joint venture, partnership, corporation or other business or legal entity.
- I. The undersigned certifies that he is able to furnish labor that can work in harmony with all with all laws and regulations applicable to awards made subject forty-four A.
- a. Have been in business under the present name for _____ years.
- b. Ever failed to complete any work awarded? _____ (Yes), _____ (No)
If yes, explain: _____
- c. Bank Reference: _____
- J. The Bidder is required to state below all work he/she and his/her subcontractors (if subcontractors are to perform substantial portions of the work) has compete within the past five (5) years of a similar character and value to that of the work included in the proposed Contract and to give references that will enable the Owners to judge the Bidder's experience, skill and business standing. The Bidder is required to list a minimum of three (3) completed projects that are comparable in scope, complexity, and value. For each project, include the name, location, type, date complete, construction value and owner contact.

(Add supplementary page if necessary)

- K. The Bidder is required to state below all construction projects he/she currently has under contract. For each project, include the name, location, type, scheduled completion date, construction value and owner contact.

- L. The undersigned further certifies under the penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of section 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation declared there under.

- M. The undersigned bidder hereby certifies he/she will comply with the minority workforce percentage ratio and specific affirmative action steps contained in the EEO/AA provisions of the Contract, including compliance with Minority/Women Business Enterprise as required under these contract provisions. The contractor receiving the award of the Contract shall be required to obtain from each of its subcontractors a copy of its bidder's certification and submit it to the contracting agency prior to the award of such subcontract, regardless of tier, that it will comply with the minority workforce ratio and specific affirmative action steps contained in these EEO/AA contract provisions.

Date: _____

Name of General Bidder

By:

Name and Title of Person

Signing Bond Business

Address

FORM A: CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, firm and made without collusion or fraud with any other person. As used in this section the word 'person' shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Authorized Name

Authorized Signature

Date

Social Security Number or Federal

Identification Number Legal Name of Business Entity (Print or Type)

Address

City, State, Zip Code

Corporate Seal (If applicable):

FORM B:
CERTIFICATE OF FOREIGN CORPORATION

The undersigned certifies that it has been duly established, organized, or chartered as a corporation under the laws of:

Jurisdiction

The undersigned further certifies that it complies with the requirements of M.G.L, c. 30, sec. 39L and with the requirements of M.G.L, c. 181 relative to the registration and operation of foreign corporations within the Commonwealth of Massachusetts.

Name of Person Signing the Bid or Proposal

Date

Signature of Person Signing the Bid or Proposal

Date

Name of Business (Print or Type)

Corporate Seal (If applicable):

FORM C:
COMMONWEALTH OF MASSACHUSETTS SCHEDULE FOR PARTICIPATION
BY WOMEN/MINORITY BUSINESS ENTERPRISE BIDDER CERIFICATION

A bidder agrees to expend at least the amount of the contract set forth below if awarded, for W/MBE. For the purposes of this commitment, the designation means a business that has been certified by SOMWBA as such. The Bidder must indicate the W/MBE it intends to utilize in this document as follows: (Attach another sheet if necessary.)

Company Name and Address, Nature of Participant	Dollar Value of Participation
1. _____	_____ \$
2. _____	_____ \$
3. _____	_____ \$

The undersigned hereby certifies that he or she read the terms of this condition and is authorized to bind the Bidder to the commitment herein set forth.

_____ Name of Person Signing the Bid or Proposal	_____ Date
_____ Signature of Person Signing the Bid or Proposal	_____ Date
_____ Title Name of Business (Print or Type)	

Corporate Seal (If applicable):

**FORM D:
BIDDER CERTIFICATION REGARDING PAYMENT OF PREVAILING
WAGES**

The undersigned hereby certifies, under pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable wage rates established for the project by the United States Department of Labor per the Davis-Bacon and Related Acts. The undersigned bidder agrees to identify the awarding authority for, from, and against any loss, expense, damages, action, or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applying prevailing wage rates.

Date

Name of Person Signing the Bid or Proposal

Signature of Person Signing the Bid or

Proposal Title Name of Business (Print or Type)

Corporate Seal (If applicable):

FORM E: CERTIFICATION OF PAYMENT OF STATE TAXES

Legislation enacted by the Commonwealth of Massachusetts, effective, 1983, requires that attestation below be signed:

Pursuant to M.G.L c. 62C, sec. 49A, I certify under the penalties of perjury, that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes required by law.

APPROVAL OF A CONTRACT OR ANY OTHER AGREEMENT WILL NOT BE GRANTED UNLESS THIS CERTIFICATION CLAUSE IS SIGNED BY AN AUTHORIZED CORPORATE OFFICER.

THE TAXPAYER IDENTIFICATION NUMBER WILL BE FURNISHED TO THE MASSACHUSETTS DEPARTMENT OF REVENUE TO DETERMINE IF TAX FILINGS AND/OR TAX PAYMENT OBLIGATIONS HAVE BEEN MET. PROVIDERS WHO FAIL TO CORRECT THEIR NON-FILING AND/OR DELINQUENCY STATUS SHALL NOT HAVE A CONTRACT OR ANY OTHER AGREEMENT ISSUED, RENEWED OR EXTENDED

(Signature of Individual)	Title
---------------------------	-------

Social Security Number or Federal Identification Number	Corporate Name
---	----------------

Name of Person Signing the Proposal (Print or Type)	Date
---	------

Legal Name of Business Entity (Print or Type)	Business Address
---	------------------

Corporate Seal (If applicable):

FORM F: CERTIFICATION OF AUTHORITY MEETING OF BOARD OF DIRECTORS

(Note: If business entity is a partnership or individual, all owners shall sign this form.)

At a meeting of the Directors of the _____ (Corporation) duly called and held at _____ (Location) on the _____ day of _____, 20____, at which a quorum was present and acting, it was voted that _____, (Name) the _____ (Title/Position) of this Corporation, is hereby authorized and empowered to make, into, sign, seal and deliver on behalf of the Corporation a Contract for _____ with the _____, and the performance and payment bonds each in the amount as specified by the Owner.

I hereby certify that the above is a true and correct copy of the record, that said vote has not been amended or repealed and is in full force, and effect as of this date and that _____, (Name) is duly elected _____ (Title/Position) of the corporation.

Clerk or secretary of the Corporation

Date

(Note: If the Bidder is a corporation, affix corporate seal and give below the names of its president, treasurer, and general manager, if any: if a partnership, give full names and residential addresses of all partners; and if an individual, give residential dress if different from business address.)

The required names and addresses of all person interested in this proposal, as Principals, are as follows:

FORM G: REFERENCE FORM

Bidder must provide references for three other Municipalities provided the same, or similar, services of a same size.

Bidder: _____

Address: _____

Reference: _____ **Contact:** _____

Address: _____ Phone: _____

_____ Email: _____

Description and date(s) of supplies or services provided: _____

Reference: _____ **Contact:** _____

Address: _____ Phone: _____

_____ Email: _____

Description and date(s) of supplies or services provided: _____

Reference: _____ **Contact:** _____

Address: _____ Phone: _____

_____ Email: _____

Description and date(s) of supplies or services provided: _____

CONTRACT FORM
for
STRATTON SCHOOL, BISHOP SCHOOL, AND PEIRCE SCHOOL
PLAYGROUNDS

THIS AGREEMENT, made as of this _____ day of _____, 20____, by and between the TOWN OF ARLINGTON, MASSACHUSETTS, acting through its TOWN MANAGER, hereinafter called the 'Owner' and _____ (Name of Contractor) of, county of _____ and State of _____, hereinafter called the 'Contractor'.

WITNESSETH; That the Contractor and the Owner for the consideration hereinafter named agrees as follow:

1. **SCOPE:** The Contractor will furnish at his own proper cost and expense all materials, supplies, machinery, equipment, appliances, tools, superintendence, labor, insurance and other items and services necessary to complete the work as shown and described on the Contract Documents entitled "**Stratton School, Bishop School, and Peirce School Playgrounds**", Arlington, Massachusetts, hereinafter called the 'Project', prepared by Warner Larson Landscape Architects. hereinafter called the 'Designer', or 'Landscape Architect'.
2. **CONTRACT SUM:** The owner agrees to pay the contractor, and the contractor agrees to accept in full consideration for the performance of the contract, subject to additions and deductions provided for in the contract documents, in current funds, the sum of dollars (\$), hereinafter called the 'Contract Sum' and to make payments on account thereof, as described below and elsewhere in the Contract Documents.
3. **COMMENCEMENT OF WORK AND TIME OF COMPLETION:** The contractor agrees to commence work on the contract within seven (7) calendar days from the receipt of written Notice to Proceed issued by the Owner and/or within fourteen (14) calendar days after execution of the contract Agreement and to thereafter diligently and continuously carry on the work. They agree to complete the work on or before **November 1, 2022**, except as herein noted.
4. **LIQUIDATED DAMAGES:** The Contractor agrees to pay the Owner liquidated damages for failure to complete the Project in conformance with the time allowances as set forth above at the rate of \$100.00 per calendar day.
5. **PAYMENTS TO CONTRACTOR:** Payments shall be made in accordance with Chapter 30, Section 39K of the General Laws of the Commonwealth of Massachusetts, including all current amendments, generally as follows:
 - A. Within fifteen days after receipt from the Contractor, at the place designated by the Owner if such a place is so designated, of a period estimate requesting payment of the amount due for the preceding month, the Owner will make a periodic payment to the Contractor for the work performed during the preceding month and for the - materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title or to which a subcontractor has title and has authorized to Contractor to transfer title to the Owner, less (1) a retention based on its estimate of the fair value of its claims against the Contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance

with the provisions of Section 39F, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the Contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the Owner, less than one percent of the original contract price, or (b) the Contractor substantially completes the work and the Owner takes possession for occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less (1) a retention based on its estimate of the fair value of its claim against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on the demands for same in accordance with the provisions of Section 39F, or based on the record of payments by the Contractor to the subcontractors under this contract if such record of payment indicates that the Contractor has not paid subcontractors as provided in Section 39F. If the Owner fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of five percent per annum commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the Contractor, provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for Final Payment until fifteen days after receipt of such a periodic estimate from the Contractor, at the place designated by the Owner if such a place is so designated. The Contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

- B. The Owner may make changes in any periodic estimate submitted by the Contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided that the Owner may, within seven days after receipt, return to the Contractor for correction any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt for such periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of Section 39G shall not apply to any contract for the construction, reconstruction, remodeling, repair, or demolition of any public building to which this section applies.

6. PAYMENTS TO SUBCONTRACTORS: Payments shall be made in accordance with Chapter 30, Section 39F of the General Laws of the Commonwealth of Massachusetts, including all current amendments, generally as follows:

- A. Forthwith after the General Contractor receives payment on account of a period estimate, the General Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.
- B. Not later than the sixty-fifth day after each Subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the Subcontract less amounts retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the Subcontractor, and the Owner shall pay that amount to the General Contractor. The General Contractor shall forthwith pay to the Subcontractor the full amount

received from the Owner less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.

- C. Each payment made by the Owner to the General Contractor pursuant to subparagraphs (A) and (B) of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the General Contractor for the account of that Subcontractor: and the Owner shall take reasonable steps to compel the General Contractor to make each payment to each such Subcontractor. If the Owner has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the General Contractor for payment to the Subcontractor as provided in subparagraphs (A) and (B), the Owner shall act upon demand as provided in this Section.
- D. If, within seventy days after the Subcontractor has substantially completed the Subcontract work, the Subcontractor has not received from the General Contractor the balance due under the Subcontract including any amount due for extra labor and materials furnished to the General Contractor, less any amount retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the General Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the Subcontract and also a statement of the status of completion of the Subcontract work. Any demand made after Substantial Completion of the Subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the Subcontract work. Within ten days after the Subcontractor has delivered or so mailed the demand to the Owner and delivered or so mailed a copy to the General Contractor, the General Contractor may reply to the demand. The reply shall be a sworn statement delivered to or sent by certified mail to the Owner and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the Subcontract including any amount due for extra labor and materials furnished to the General Contractor and of the amount due for each claim made by the General Contractor against the Subcontractor.
- E. Within fifteen days after receipt of the demand by the Owner, but in no event prior to the seventieth day after Substantial Completion of the Subcontract work, the Awarding Authority shall make direct payment to the Subcontractor of the balance due under the Subcontract, less any amount (i) retained by the Owner as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the General Contractor in the sworn reply: provided, that the Owner shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required in subparagraph (D); The Owner shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.
- F. The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (E) in an interest-bearing joint account in the names of the General Contractor and the Subcontractor in a bank in Massachusetts; selected by the Owner and agreed upon by the General

Contractor and the Subcontractor and shall notify the General Contractor and the Subcontractor of the date of deposit and the bank receiving the deposit. The bank shall pay the amount on the account, including accrued interest, as provided in an agreement between the General Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

- G. All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (F) shall be made out of amounts payable to the General Contractor at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts later become payable to the General Contractor and in order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Owner to the General Contractor to the extent of such payment.
- H. The Owner shall deduct from payments to a General Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (F), are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the General Contractor.
- I. On all contracts for building construction subject to the provisions of Sections 44A to 44L, inclusive, of Chapter 149, periodic payments for work performed by a Subcontractor shall be made to the General Contractor for payment to the Subcontractor and shall be paid to the Subcontractor forthwith after receipt thereof by the General Contractor and without any ten day waiting period as provided above, less any amount claimed by the General Contractor in a letter containing a breakdown of the claim and sent to the Subcontractor with such payment, provided that a General Contractor, who has received a periodic estimate for a periodic payment in proper form from a Subcontractor three days, Saturdays, Sundays and holidays excluded, before the due date of the General Contractor's periodic estimate for the same periodic payment period less any amount claimed by the General Contractor in a letter containing a breakdown of the claim and sent to the Subcontractor with such payment, even though the General Contractor does not submit a periodic estimate to the Owner for that payment period; and provided, further, that the Owner shall take all reasonable steps to compel the General Contractor to make payment to the Subcontractors as provided in this paragraph, and upon the written request of a Subcontractor setting forth the amount payable but not paid, a copy of which shall be sent to the General Contractor, shall make direct payment to a Subcontractor, as provided for above, which shall discharge the obligation of the Owner to the General Contractor to extent of any such payment.
- J. The Owner shall not include in any direct payment to a Subcontractor pursuant to this section any amount claimed from that Subcontractor by the General Contractor in a letter containing a breakdown of the claim and sent to the Owner within ten days after the receipt by the General Contractor of the copy of the request of the Subcontractor to the Owner for direct payment.

7. CONDITIONS OF EMPLOYMENT

- A. The schedule of Minimum Wage Rates and Health and Pension Fund Contributions as determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 m 27D, inclusive, AS amended, is hereby made a part of this Agreement.

- B. The Contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wages paid to regular police officers in such city or town.
- C. No laborer, workman, mechanic, foreman or inspector working within the Commonwealth, in the employ of the Contractor, Subcontractor or any other person doing or contracting to do the whole or a part of the work contemplated by the Contract, shall be required or permitted to work more than eight hours in any one day or forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency.
- D. Every employee of the Contractor or any Subcontractor shall lodge, board and trade where and with whom they elect; and no person or his agents or employees shall be directly or indirectly required, as a condition of employment that the employee to lodge, board, or trade at a particular place or with a particular person.

8. SUBCONTRACTORS

- A. The Contractor will employ the following Subcontractors on the work and will pay for the execution of his as defined in the Contract Documents; and subject to the additions and deductions provided in the subject to the additions and deductions provided in the Contract Documents, the sum shown opposite his name.

<u>Class of Work</u>	<u>Subcontractor</u>	<u>Sub-Contractor Sum</u>

The names of any additional Subcontractors whom the Contractor proposed to employ shall be submitted to the Designer for approval. No such Subcontractor shall be employed to who's standing or ability the Owner or the Designer has any reasonable objection.

9. THE CONTRACT DOCUMENTS: The General Conditions of the Contract, the Specifications, and the Drawings, together with this Agreement, for the Contract, and they are as fully a part of the Contract as if hereto attached or herein repeated Drawings and Specifications titled: Spy Pond Park & Parmenter School Playground Improvements
10. INCORPORATION OF STATUTES BY REFERENCE: If statutes of the Commonwealth of Massachusetts in any way relating to the construction, alterations, repair, and installation of public works, particularly with reference to labor and labor rates, they shall be strictly complied with by the Contractor and it is understood that all such statutes are incorporated by reference in this Contract.

11. It is expressly agreed that this Agreement is to be executed for and in behalf of the Owner by the members of its Board of Selectmen and any of its appoints and that such persons are acting in a representative capacity for and in behalf of Owner, and that such persons shall not incur any personal liability hereunder.

IN WITNESS whereof, inhabitants of the Town of Arlington and

have caused these presents to be executed by their

hereunto duly authorized the day and year first written.

TOWN OF ARLINGTON

Adam W. Chapdelaine, Town Manager

Certification:
I hereby Certify that an
appropriation in the amount of the
Contract is available.

Town Accountant

Contractor

By: (Title)

Approved as to Matter of Form:

Town Counsel

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we

(Name of Contractor)

A _____
(Corporation, Partnership, or Individual)

hereinafter called "Principal" and

(Surety)
of _____, State of _____, hereinafter
called the "Surety", are held and firmly bound into

THE TOWN OF ARLINGTON, MASSACHUSETTS
(Owner)

acting through its TOWN MANAGER

ARLINGTON, MASSACHUSETTS
(City and State)

hereinafter called "Owner", in the penal sum of _____ Dollars
(\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be
made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly
by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain
contract with the Owner, dated _____ day of a copy of which is hereto attached and
made a part hereof for the construction of

Arlington, Massachusetts

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings,
covenants, terms, conditions, and agreements of said contract during the original term thereof, and any
extensions thereof which may be granted by, the Owner, with or without notice to the Surety, and if he
shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save
harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and
shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good
any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no
change, extension of time, alteration, or addition to the terms of the Contract or to the work to be
performed thereunder or the specifications accompanying the same shall in any way affect its obligation of
this, Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition
to the terms of the contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

INWITNESS WHEREOF, the parties to these present have duly executed in this Bond on the day of _____

ATTEST:

Principal

By:

Secretary

(Address - zip code)

Witness as to Principal

(Address - zip code)

(Seal)

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LABOR AND MATERIALS PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we

(Name of Contractor) a

(Corporation, Partnership or Individual)
hereinafter called "Principal" and

(Surety)

of _____, State of _____,
hereinafter called the "Surety", are held and firmly bound into

THE TOWN OF ARLINGTON, MASSACHUSETTS
(Owner)

acting through its TOWN MANAGER

ARLINGTON, MASSACHUSETTS
(City and State)

herein called "Owner", in the penal sum of

_____, Dollars
(\$ _____) in lawful money of the United
States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs,
executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that 'Whereas, the Principal entered into a certain
contract with the Owner, dated the day of _____, a copy of
which is hereto attached and made a part hereof for the construction of:

STRATTON SCHOOL, BISHOP SCHOOL, AND PEIRCE SCHOOL PLAYGROUNDS

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors,
and corporations furnishing materials for or performing labor in the prosecution of the work provided for
in such contract, and any authorized extension or modification thereof, including all amounts due for
materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed
or used in connection with the construction of such work, and all insurance premiums on said work, and
for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be
void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no
change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed
thereunder or the specifications accompanying the Same shall in any wise affect its obligation on this
Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the
terms of the contract or to the work or to the specifications.

Stratton, Bishop, Peirce School Playgrounds
Town Of Arlington, MA

April 20, 2020
BID DOCUMENTS

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, the parties to these present have duly executed in this Bond on the day of _____,

ATTEST:

Principal

By: Secretary

(Address-Zip Code)

Witness as to Principal

(Seal)

(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

END OF DOCUMENT

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BY-LAWS OF THE TOWN OF ARLINGTON
TITLE I
ARTICLE 16

CONSTRUCTION PROJECTS

Section 1. Women Work Force Participation

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

- A. Contractor shall maintain as a goal on this project a not less than five percent ratio of women work force to total project hours in both the general contract and each individual filed sub-bid contract, if applicable. The preceding sentence shall be included in all construction contracts whether entered into by the Town pursuant to the provisions of M.G.L. c. 149 or M.G. L. c 30, §39M et. seq. provided however, that if entered into under Chapter 30 same shall not be deemed to apply where the projected bid price as determined by the Director of Public Works is not likely to exceed \$200,000.
- B. A Labor Scheduling Table which will be used as a tool for achieving a range of women work force participation for the entire project in both the general contract and each individual filed sub-bid contract.

Section 2. Equal Opportunity Goal Compliance

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

- A. Before starting work, the contractors (includes the general contractor, for itself and its subcontractors, as well as all filed sub-bid contractors, if applicable) will submit plans for achievement of the equal opportunity goals of the contract. All contractors will be required to make a good faith effort to achieve these goals. The plan will indicate if the contractors expect to achieve the requirements during the first quarter. If there are reasons why the contractors do not expect to achieve the requirements during the first quarter year of the contract construction phase, then the contractors shall provide a plan calculated to address, to the extent reasonably possibly, these obstacles to a good faith effort to achieve such goals.
- B. Not more than ten days following the end of each work quarter, the contractors will report on the achievement of the goals, detailing the good faith efforts that have been made and will continue to be made and any other appropriate efforts not yet undertaken.
- C. All reports will be signed by an officer or principal of the company who has the authority to contractually obligate the company.

Section 3. Recruitment and Training

Any board, officer, committee, or other agency of the Town, which acts on behalf of the Town in making or supervising any contract, in an amount exceeding the sum of \$100,000 for the purchase of goods or services or for the construction, renovation, or repair of buildings or other improvement of real estate, may make arrangements with contractors and other interested agencies for special programs of recruitment and training in connection with the work to be performed on such contract, with the objective of promoting equal employment opportunity for members of minority groups protected by the fair employment laws of the Commonwealth and the United States. Any board, officer, committee or other Town agency may expend Town funds in carrying them out provided that appropriations specifically designed for such purposes have been voted by the Town Meeting.



TOWN OF ARLINGTON EQUAL OPPORTUNITY ADVISORY COMMITTEE

730 MASSACHUSETTS AVENUE, ARLINGTON, MA 02476
PHONE (781) 316-3120 FAX: (781) 316-3129

**TRICIA O'DONOGHUE, CHAIR
BARBARA BOLTZ
AUGUSTA HAYDOCK
JACK JONES**

**CARYN COVE MALLOY
EQUAL OPPORTUNITY OFFICER**

CONTRACTOR CERTIFICATION

During the performance of the Contract, the Contractor and all subcontractors (hereafter collectively referred to as "the Contractor") for a town construction contract or town assisted construction contract, for him/herself, his/her assignees and successors in interest, agree to comply with all applicable equal employment opportunity, non-discrimination and affirmative action requirements, including but not limited to the following:

The Contractor shall comply with the provisions of Town of Arlington Bylaws, Anti-Discrimination policies and Chapter 151B of the Massachusetts General Laws, as amended, and all other applicable anti-discrimination and equal opportunity laws, all of which are herein incorporated by reference and made a part of this contract.

In connection with the performance of work under this contract, the Contractor shall undertake, in good faith, affirmative action measures to eliminate any discriminatory barrier in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, sex, gender identity, sexual orientation, age, genetic information, ancestry, children, marital status, veteran status or membership in the armed service, the receiving of public assistance, and handicap. Such affirmative action measures shall entail a list of positive and aggressive measures which shall include but not be limited to, advertising employment opportunities in minority and other community news media; notifying minority women and other community-based organizations of employment opportunities; maintaining a file of names and addresses of each worker referred to the Contractor and what action was taken concerning such worker; and notifying this Committee in writing when a union with whom the Contractor has a collective bargaining agreement has failed to refer a minority or woman worker.

The Contractor shall submit to the Equal Opportunity Advisory Committee, through the Purchasing Director Domenic Lanzillotti, the following Contractor's Certification with all attachments. The Contractor's Certification will be reviewed by the Committee and will inform the Contractor of any deficiencies to be corrected.

CONTRACTOR CERTIFICATION

_____ certifies that they:
(Contractor Name)

1. Will not discriminate in their employment practices.
2. Intend to use, if General Contractor, the following listed construction trades in the work under the contract:

3. If Trade Subcontractor, will provide the following work under the contract:

4. Will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals of the Town of Arlington and the Commonwealth of Massachusetts and specific affirmative steps contained herein; and to provide evidence of its good faith efforts. Attached hereto, please find:

- A. Employment Opportunities advertised in:

- B. Notification to Minority/Women/Community based Organizations such as:

C. List of workers referred to Contractor and note on what action was taken:

D. Written notification that Union/Local No. _____ failed to refer a Minority or
Female worker during the week of: _____

Signature of Officer

Date

Printed Name of Officer and Title

MINIMUM WAGE RATES

SCHEDULE OF PREVAILING WAGE RATES

Per Chapter M.G.L. Chapter 149, §§26-27

Insert the schedule of minimum wage rates obtained from United States Department of Labor.



CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H

ROSALIN ACOSTA
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority: Town of Arlington
Contract Number: 22-20 **City/Town:** ARLINGTON
Description of Work: Excavation, Rubber safety surfacing, landscaping, site furnishings and pavement.
Job Location: Various

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
 - An Awarding Authority must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
 - The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
 - All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
 - The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
 - Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
 - Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
 - Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
 - Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
-

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.05	\$13.41	\$16.01	\$0.00	\$66.47
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.12	\$13.41	\$16.01	\$0.00	\$66.54
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.24	\$13.41	\$16.01	\$0.00	\$66.66
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.93	\$9.10	\$17.57	\$0.00	\$68.60
	06/01/2022	\$42.93	\$9.10	\$17.57	\$0.00	\$69.60
	12/01/2022	\$43.93	\$9.10	\$17.57	\$0.00	\$70.60
	06/01/2023	\$44.93	\$9.10	\$17.57	\$0.00	\$71.60
	12/01/2023	\$46.18	\$9.10	\$17.57	\$0.00	\$72.85
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.93	\$9.10	\$17.57	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.93	\$9.10	\$17.57	\$0.00	\$68.60
	06/01/2022	\$42.93	\$9.10	\$17.57	\$0.00	\$69.60
	12/01/2022	\$43.93	\$9.10	\$17.57	\$0.00	\$70.60
	06/01/2023	\$44.93	\$9.10	\$17.57	\$0.00	\$71.60
	12/01/2023	\$46.18	\$9.10	\$17.57	\$0.00	\$72.85
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i> For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	12/01/2021	\$41.93	\$9.10	\$17.57	\$0.00	\$68.60
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	02/01/2022	\$57.15	\$11.39	\$22.34	\$0.00	\$90.88
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Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Boston

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.58	\$11.39	\$22.34	\$0.00	\$62.31
2	60	\$34.29	\$11.39	\$22.34	\$0.00	\$68.02
3	70	\$40.01	\$11.39	\$22.34	\$0.00	\$73.74
4	80	\$45.72	\$11.39	\$22.34	\$0.00	\$79.45
5	90	\$51.44	\$11.39	\$22.34	\$0.00	\$85.17

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.33	\$9.10	\$17.72	\$0.00	\$69.15
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For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2022	\$44.53	\$8.68	\$19.97	\$0.00	\$73.18
	09/01/2022	\$45.18	\$8.68	\$19.97	\$0.00	\$73.83
	03/01/2023	\$45.78	\$8.68	\$19.97	\$0.00	\$74.43
Apprentice - CARPENTER - Zone 2 Eastern MA						
Effective Date - 03/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.27	\$8.68	\$1.73	\$0.00	\$32.68
2	60	\$26.72	\$8.68	\$1.73	\$0.00	\$37.13
3	70	\$31.17	\$8.68	\$14.78	\$0.00	\$54.63
4	75	\$33.40	\$8.68	\$14.78	\$0.00	\$56.86
5	80	\$35.62	\$8.68	\$16.51	\$0.00	\$60.81
6	80	\$35.62	\$8.68	\$16.51	\$0.00	\$60.81
7	90	\$40.08	\$8.68	\$18.24	\$0.00	\$67.00
8	90	\$40.08	\$8.68	\$18.24	\$0.00	\$67.00
Effective Date - 09/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.59	\$8.68	\$1.73	\$0.00	\$33.00
2	60	\$27.11	\$8.68	\$1.73	\$0.00	\$37.52
3	70	\$31.63	\$8.68	\$14.78	\$0.00	\$55.09
4	75	\$33.89	\$8.68	\$14.78	\$0.00	\$57.35
5	80	\$36.14	\$8.68	\$16.51	\$0.00	\$61.33
6	80	\$36.14	\$8.68	\$16.51	\$0.00	\$61.33
7	90	\$40.66	\$8.68	\$18.24	\$0.00	\$67.58
8	90	\$40.66	\$8.68	\$18.24	\$0.00	\$67.58
Notes:						
% Indentured After 10/1/17; 45/45/55/55/70/70/80/80						
Step 1&2 \$30.45/ 3&4 \$36.57/ 5&6 \$56.36/ 7&8 \$62.54						
Apprentice to Journeyworker Ratio:1:5						
CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17
All Aspects of New Wood Frame Work						

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - CARPENTER (Wood Frame) - Zone 3
Effective Date - 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
2	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
3	65	\$15.70	\$7.21	\$0.00	\$0.00	\$22.91
4	70	\$16.91	\$7.21	\$0.00	\$0.00	\$24.12
5	75	\$18.12	\$7.21	\$3.80	\$0.00	\$29.13
6	80	\$19.33	\$7.21	\$3.80	\$0.00	\$30.34
7	85	\$20.54	\$7.21	\$3.80	\$0.00	\$31.55
8	90	\$21.74	\$7.21	\$3.80	\$0.00	\$32.75

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$17.86/ 3&4 \$20.22/ 5&6 \$27.57/ 7&8 \$29.94

Apprentice to Journeyworker Ratio:1:5
CEMENT MASONRY/PLASTERING
01/01/2020
\$49.07
\$12.75
\$22.41
\$0.62
\$84.85
BRICKLAYERS LOCAL 3 (BOSTON)
Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Boston)
Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$12.75	\$15.41	\$0.00	\$52.70
2	60	\$29.44	\$12.75	\$17.41	\$0.62	\$60.22
3	65	\$31.90	\$12.75	\$18.41	\$0.62	\$63.68
4	70	\$34.35	\$12.75	\$19.41	\$0.62	\$67.13
5	75	\$36.80	\$12.75	\$20.41	\$0.62	\$70.58
6	80	\$39.26	\$12.75	\$21.41	\$0.62	\$74.04
7	90	\$44.16	\$12.75	\$22.41	\$0.62	\$79.94

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$52.38	\$14.00	\$16.05	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2022	\$53.66	\$8.65	\$23.05	\$0.00	\$85.36
	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - PAINTER Local 35 - BRIDGES/TANKS
Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.83	\$8.65	\$0.00	\$0.00	\$35.48
2	55	\$29.51	\$8.65	\$6.27	\$0.00	\$44.43
3	60	\$32.20	\$8.65	\$6.84	\$0.00	\$47.69
4	65	\$34.88	\$8.65	\$7.41	\$0.00	\$50.94
5	70	\$37.56	\$8.65	\$19.63	\$0.00	\$65.84
6	75	\$40.25	\$8.65	\$20.20	\$0.00	\$69.10
7	80	\$42.93	\$8.65	\$20.77	\$0.00	\$72.35
8	90	\$48.29	\$8.65	\$21.91	\$0.00	\$78.85

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1
DEMO: ADZEMAN
LABORERS - ZONE 1

12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR
LABORERS - ZONE 1

12/01/2021	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS
LABORERS - ZONE 1

12/01/2021	\$42.08	\$9.10	\$17.57	\$0.00	\$68.75
06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 1</i>	12/01/2021	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$42.08	\$9.10	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 103

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.93	\$13.00	\$0.69	\$0.00	\$36.62
2	40	\$22.93	\$13.00	\$0.69	\$0.00	\$36.62
3	45	\$25.79	\$13.00	\$15.62	\$0.00	\$54.41
4	45	\$25.79	\$13.00	\$15.62	\$0.00	\$54.41
5	50	\$28.66	\$13.00	\$16.10	\$0.00	\$57.76
6	55	\$31.53	\$13.00	\$16.58	\$0.00	\$61.11
7	60	\$34.39	\$13.00	\$17.04	\$0.00	\$64.43
8	65	\$37.26	\$13.00	\$17.52	\$0.00	\$67.78
9	70	\$40.12	\$13.00	\$17.98	\$0.00	\$71.10
10	75	\$42.99	\$13.00	\$18.46	\$0.00	\$74.45

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.50	\$13.00	\$0.71	\$0.00	\$37.21
2	40	\$23.50	\$13.00	\$0.71	\$0.00	\$37.21
3	45	\$26.44	\$13.00	\$15.64	\$0.00	\$55.08
4	45	\$26.44	\$13.00	\$15.64	\$0.00	\$55.08
5	50	\$29.38	\$13.00	\$16.12	\$0.00	\$58.50
6	55	\$32.32	\$13.00	\$16.60	\$0.00	\$61.92
7	60	\$35.26	\$13.00	\$17.07	\$0.00	\$65.33
8	65	\$38.19	\$13.00	\$17.55	\$0.00	\$68.74
9	70	\$41.13	\$13.00	\$18.01	\$0.00	\$72.14
10	75	\$44.07	\$13.00	\$18.49	\$0.00	\$75.56

Notes :

App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
ELEVATOR CONSTRUCTORS LOCAL 4						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ELEVATOR CONSTRUCTOR - Local 4						
Effective Date - 01/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74
Notes: Steps 1-2 are 6 mos.; Steps 3-5 are 1 year						
Apprentice to Journeyworker Ratio:1:1						
ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$46.53	\$13.75	\$15.80	\$0.00	\$76.08
	05/01/2022	\$47.86	\$13.75	\$15.80	\$0.00	\$77.41
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$48.06	\$13.75	\$15.80	\$0.00	\$77.61
	05/01/2022	\$49.22	\$13.75	\$15.80	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$23.16	\$13.75	\$15.80	\$0.00	\$52.71
	05/01/2022	\$23.83	\$13.75	\$15.80	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$44.71	\$13.00	\$18.74	\$0.00	\$76.45
	09/01/2022	\$46.42	\$13.00	\$18.87	\$0.00	\$78.29
	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$41.76	\$14.00	\$16.05	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$24.50	\$9.10	\$17.57	\$0.00	\$51.17
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2022	\$49.93	\$8.68	\$20.27	\$0.00	\$78.88

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.97	\$8.68	\$1.79	\$0.00	\$35.44
2	55	\$27.46	\$8.68	\$1.79	\$0.00	\$37.93
3	60	\$29.96	\$8.68	\$14.90	\$0.00	\$53.54
4	65	\$32.45	\$8.68	\$14.90	\$0.00	\$56.03
5	70	\$34.95	\$8.68	\$16.69	\$0.00	\$60.32
6	75	\$37.45	\$8.68	\$16.69	\$0.00	\$62.82
7	80	\$39.94	\$8.68	\$18.48	\$0.00	\$67.10
8	85	\$42.44	\$8.68	\$18.48	\$0.00	\$69.60

Notes: Steps are 750 hrs.

% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)

Step 1&2 \$32.94/ 3&4 \$39.66/ 5&6 \$60.32/ 7&8 \$67.10

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 35 (ZONE 2)	01/01/2022	\$43.16	\$8.65	\$23.05	\$0.00	\$74.86
	07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

Classification

**Effective Date Base Wage Health Pension Supplemental
Unemployment Total Rate**

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$8.65	\$0.00	\$0.00	\$30.23
2	55	\$23.74	\$8.65	\$6.27	\$0.00	\$38.66
3	60	\$25.90	\$8.65	\$6.84	\$0.00	\$41.39
4	65	\$28.05	\$8.65	\$7.41	\$0.00	\$44.11
5	70	\$30.21	\$8.65	\$19.63	\$0.00	\$58.49
6	75	\$32.37	\$8.65	\$20.20	\$0.00	\$61.22
7	80	\$34.53	\$8.65	\$20.77	\$0.00	\$63.95
8	90	\$38.84	\$8.65	\$21.91	\$0.00	\$69.40

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - OPERATING ENGINEERS - Local 4						
Effective Date - 12/01/2021						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.26	\$14.00	\$0.00	\$0.00	\$42.26
2	60	\$30.83	\$14.00	\$16.05	\$0.00	\$60.88
3	65	\$33.40	\$14.00	\$16.05	\$0.00	\$63.45
4	70	\$35.97	\$14.00	\$16.05	\$0.00	\$66.02
5	75	\$38.54	\$14.00	\$16.05	\$0.00	\$68.59
6	80	\$41.10	\$14.00	\$16.05	\$0.00	\$71.15
7	85	\$43.67	\$14.00	\$16.05	\$0.00	\$73.72
8	90	\$46.24	\$14.00	\$16.05	\$0.00	\$76.29
Notes:						
Apprentice to Journeyworker Ratio:1:6						
HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.93	\$9.10	\$17.57	\$0.00	\$68.60
	06/01/2022	\$42.93	\$9.10	\$17.57	\$0.00	\$69.60
	12/01/2022	\$43.93	\$9.10	\$17.57	\$0.00	\$70.60
	06/01/2023	\$44.93	\$9.10	\$17.57	\$0.00	\$71.60
	12/01/2023	\$46.18	\$9.10	\$17.57	\$0.00	\$72.85
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.93	\$9.10	\$17.57	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2021	\$51.40	\$13.80	\$17.14	\$0.00	\$82.34
	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston						
Effective Date - 09/01/2021						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.70	\$13.80	\$12.42	\$0.00	\$51.92
2	60	\$30.84	\$13.80	\$13.36	\$0.00	\$58.00
3	70	\$35.98	\$13.80	\$14.31	\$0.00	\$64.09
4	80	\$41.12	\$13.80	\$15.25	\$0.00	\$70.17
Effective Date - 09/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.93	\$13.80	\$12.42	\$0.00	\$53.15
2	60	\$32.31	\$13.80	\$13.36	\$0.00	\$59.47
3	70	\$37.70	\$13.80	\$14.31	\$0.00	\$65.81
4	80	\$43.08	\$13.80	\$15.25	\$0.00	\$72.13
Notes: Steps are 1 year						
Apprentice to Journeyworker Ratio:1:4						
IRONWORKER/WELDER IRONWORKERS LOCAL 7 (BOSTON AREA)	03/16/2022	\$50.60	\$8.20	\$26.50	\$0.00	\$85.30

Apprentice - IRONWORKER - Local 7 Boston						
Effective Date - 03/16/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$30.36	\$8.20	\$26.50	\$0.00	\$65.06
2	70	\$35.42	\$8.20	\$26.50	\$0.00	\$70.12
3	75	\$37.95	\$8.20	\$26.50	\$0.00	\$72.65
4	80	\$40.48	\$8.20	\$26.50	\$0.00	\$75.18
5	85	\$43.01	\$8.20	\$26.50	\$0.00	\$77.71
6	90	\$45.54	\$8.20	\$26.50	\$0.00	\$80.24
Notes: ** Structural 1:6; Ornamental 1:4						
Apprentice to Journeyworker Ratio:**						
JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE I	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
LABORERS - ZONE 1	06/01/2022	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
	12/01/2022	\$43.18	\$9.10	\$17.57	\$0.00	\$69.85
	06/01/2023	\$44.18	\$9.10	\$17.57	\$0.00	\$70.85
	12/01/2023	\$45.43	\$9.10	\$17.57	\$0.00	\$72.10

Apprentice - LABORER - Zone 1

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$24.71	\$9.10	\$17.57	\$0.00	\$51.38
2	70	\$28.83	\$9.10	\$17.57	\$0.00	\$55.50
3	80	\$32.94	\$9.10	\$17.57	\$0.00	\$59.61
4	90	\$37.06	\$9.10	\$17.57	\$0.00	\$63.73

Effective Date - 06/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.31	\$9.10	\$17.57	\$0.00	\$51.98
2	70	\$29.53	\$9.10	\$17.57	\$0.00	\$56.20
3	80	\$33.74	\$9.10	\$17.57	\$0.00	\$60.41
4	90	\$37.96	\$9.10	\$17.57	\$0.00	\$64.63

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
LABORERS - ZONE 1 (HEAVY & HIGHWAY)						

Apprentice - LABORER (Heavy & Highway) - Zone 1

Effective Date - 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$24.71	\$9.10	\$17.57	\$0.00	\$51.38
2	70	\$28.83	\$9.10	\$17.57	\$0.00	\$55.50
3	80	\$32.94	\$9.10	\$17.57	\$0.00	\$59.61
4	90	\$37.06	\$9.10	\$17.57	\$0.00	\$63.73

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
LABORERS - ZONE 1	06/01/2022	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
	12/01/2022	\$43.18	\$9.10	\$17.57	\$0.00	\$69.85
	06/01/2023	\$44.18	\$9.10	\$17.57	\$0.00	\$70.85
	12/01/2023	\$45.43	\$9.10	\$17.57	\$0.00	\$72.10

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
	06/01/2022	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
	12/01/2022	\$43.18	\$9.10	\$17.57	\$0.00	\$69.85
	06/01/2023	\$44.18	\$9.10	\$17.57	\$0.00	\$70.85
	12/01/2023	\$45.43	\$9.10	\$17.57	\$0.00	\$72.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	06/01/2024	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
	06/01/2022	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
	12/01/2022	\$43.18	\$9.10	\$17.57	\$0.00	\$69.85
	06/01/2023	\$44.18	\$9.10	\$17.57	\$0.00	\$70.85
	12/01/2023	\$45.43	\$9.10	\$17.57	\$0.00	\$72.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
	06/01/2022	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
	12/01/2022	\$43.18	\$9.10	\$17.57	\$0.00	\$69.85
	06/01/2023	\$44.18	\$9.10	\$17.57	\$0.00	\$70.85
	12/01/2023	\$45.43	\$9.10	\$17.57	\$0.00	\$72.10
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2022	\$43.69	\$11.39	\$20.37	\$0.00	\$75.45

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile						
Effective Date - 02/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.37	\$0.00	\$53.61
2	60	\$26.21	\$11.39	\$20.37	\$0.00	\$57.97
3	70	\$30.58	\$11.39	\$20.37	\$0.00	\$62.34
4	80	\$34.95	\$11.39	\$20.37	\$0.00	\$66.71
5	90	\$39.32	\$11.39	\$20.37	\$0.00	\$71.08
Notes:						
Apprentice to Journeyworker Ratio:1:3						
MARBLE MASONS,TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2022	\$57.17	\$11.39	\$22.31	\$0.00	\$90.87
Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile						
Effective Date - 02/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.31	\$0.00	\$62.29
2	60	\$34.30	\$11.39	\$22.31	\$0.00	\$68.00
3	70	\$40.02	\$11.39	\$22.31	\$0.00	\$73.72
4	80	\$45.74	\$11.39	\$22.31	\$0.00	\$79.44
5	90	\$51.45	\$11.39	\$22.31	\$0.00	\$85.15
Notes:						
Apprentice to Journeyworker Ratio:1:5						
MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) MILLWRIGHTS LOCAL 1121 - Zone 1	01/03/2022	\$45.52	\$8.58	\$21.57	\$0.00	\$75.67
	01/02/2023	\$47.27	\$8.58	\$21.57	\$0.00	\$77.42

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MILLWRIGHT - Local 1121 Zone 1						
Effective Date - 01/03/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$25.04	\$8.58	\$5.72	\$0.00	\$39.34
2	65	\$29.59	\$8.58	\$17.93	\$0.00	\$56.10
3	75	\$34.14	\$8.58	\$18.98	\$0.00	\$61.70
4	85	\$38.69	\$8.58	\$20.01	\$0.00	\$67.28
Effective Date - 01/02/2023						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.00	\$8.58	\$5.72	\$0.00	\$40.30
2	65	\$30.73	\$8.58	\$17.93	\$0.00	\$57.24
3	75	\$35.45	\$8.58	\$18.98	\$0.00	\$63.01
4	85	\$40.18	\$8.58	\$20.01	\$0.00	\$68.77
<div>Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66) Steps are 2,000 hours</div>						
Apprentice to Journeyworker Ratio:1:4						
MORTAR MIXER	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
LABORERS - ZONE 1	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	12/01/2021	\$23.48	\$14.00	\$16.05	\$0.00	\$53.53
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS)	12/01/2021	\$28.44	\$14.00	\$16.05	\$0.00	\$58.49
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS)	01/01/2022	\$53.66	\$8.65	\$23.05	\$0.00	\$85.36
PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.83	\$8.65	\$0.00	\$0.00	\$35.48
2	55	\$29.51	\$8.65	\$6.27	\$0.00	\$44.43
3	60	\$32.20	\$8.65	\$6.84	\$0.00	\$47.69
4	65	\$34.88	\$8.65	\$7.41	\$0.00	\$50.94
5	70	\$37.56	\$8.65	\$19.63	\$0.00	\$65.84
6	75	\$40.25	\$8.65	\$20.20	\$0.00	\$69.10
7	80	\$42.93	\$8.65	\$20.77	\$0.00	\$72.35
8	90	\$48.29	\$8.65	\$21.91	\$0.00	\$78.85

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2022	\$44.56	\$8.65	\$23.05	\$0.00	\$76.26
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2022	\$45.76	\$8.65	\$23.05	\$0.00	\$77.46
	01/01/2023	\$46.96	\$8.65	\$23.05	\$0.00	\$78.66
	07/01/2023	\$48.16	\$8.65	\$23.05	\$0.00	\$79.86
	01/01/2024	\$49.36	\$8.65	\$23.05	\$0.00	\$81.06
	07/01/2024	\$50.56	\$8.65	\$23.05	\$0.00	\$82.26
	01/01/2025	\$51.76	\$8.65	\$23.05	\$0.00	\$83.46

Classification

**Effective Date Base Wage Health Pension Supplemental
Unemployment Total Rate**

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.28	\$8.65	\$0.00	\$0.00	\$30.93
2	55	\$24.51	\$8.65	\$6.27	\$0.00	\$39.43
3	60	\$26.74	\$8.65	\$6.84	\$0.00	\$42.23
4	65	\$28.96	\$8.65	\$7.41	\$0.00	\$45.02
5	70	\$31.19	\$8.65	\$19.63	\$0.00	\$59.47
6	75	\$33.42	\$8.65	\$20.20	\$0.00	\$62.27
7	80	\$35.65	\$8.65	\$20.77	\$0.00	\$65.07
8	90	\$40.10	\$8.65	\$21.91	\$0.00	\$70.66

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.88	\$8.65	\$0.00	\$0.00	\$31.53
2	55	\$25.17	\$8.65	\$6.27	\$0.00	\$40.09
3	60	\$27.46	\$8.65	\$6.84	\$0.00	\$42.95
4	65	\$29.74	\$8.65	\$7.41	\$0.00	\$45.80
5	70	\$32.03	\$8.65	\$19.63	\$0.00	\$60.31
6	75	\$34.32	\$8.65	\$20.20	\$0.00	\$63.17
7	80	\$36.61	\$8.65	\$20.77	\$0.00	\$66.03
8	90	\$41.18	\$8.65	\$21.91	\$0.00	\$71.74

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2022	\$42.62	\$8.65	\$23.05	\$0.00	\$74.32
PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$43.82	\$8.65	\$23.05	\$0.00	\$75.52
	01/01/2023	\$45.02	\$8.65	\$23.05	\$0.00	\$76.72
	07/01/2023	\$46.22	\$8.65	\$23.05	\$0.00	\$77.92
	01/01/2024	\$47.42	\$8.65	\$23.05	\$0.00	\$79.12
	07/01/2024	\$48.62	\$8.65	\$23.05	\$0.00	\$80.32
	01/01/2025	\$49.82	\$8.65	\$23.05	\$0.00	\$81.52

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**Effective Date - 01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.31	\$8.65	\$0.00	\$0.00	\$29.96
2	55	\$23.44	\$8.65	\$6.27	\$0.00	\$38.36
3	60	\$25.57	\$8.65	\$6.84	\$0.00	\$41.06
4	65	\$27.70	\$8.65	\$7.41	\$0.00	\$43.76
5	70	\$29.83	\$8.65	\$19.63	\$0.00	\$58.11
6	75	\$31.97	\$8.65	\$20.20	\$0.00	\$60.82
7	80	\$34.10	\$8.65	\$20.77	\$0.00	\$63.52
8	90	\$38.36	\$8.65	\$21.91	\$0.00	\$68.92

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.91	\$8.65	\$0.00	\$0.00	\$30.56
2	55	\$24.10	\$8.65	\$6.27	\$0.00	\$39.02
3	60	\$26.29	\$8.65	\$6.84	\$0.00	\$41.78
4	65	\$28.48	\$8.65	\$7.41	\$0.00	\$44.54
5	70	\$30.67	\$8.65	\$19.63	\$0.00	\$58.95
6	75	\$32.87	\$8.65	\$20.20	\$0.00	\$61.72
7	80	\$35.06	\$8.65	\$20.77	\$0.00	\$64.48
8	90	\$39.44	\$8.65	\$21.91	\$0.00	\$70.00

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2*

01/01/2022	\$43.16	\$8.65	\$23.05	\$0.00	\$74.86
07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**Effective Date - 01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$8.65	\$0.00	\$0.00	\$30.23
2	55	\$23.74	\$8.65	\$6.27	\$0.00	\$38.66
3	60	\$25.90	\$8.65	\$6.84	\$0.00	\$41.39
4	65	\$28.05	\$8.65	\$7.41	\$0.00	\$44.11
5	70	\$30.21	\$8.65	\$19.63	\$0.00	\$58.49
6	75	\$32.37	\$8.65	\$20.20	\$0.00	\$61.22
7	80	\$34.53	\$8.65	\$20.77	\$0.00	\$63.95
8	90	\$38.84	\$8.65	\$21.91	\$0.00	\$69.40

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)

PAINTERS LOCAL 35 - ZONE 2

01/01/2022	\$41.22	\$8.65	\$23.05	\$0.00	\$72.92
07/01/2022	\$42.42	\$8.65	\$23.05	\$0.00	\$74.12
01/01/2023	\$43.62	\$8.65	\$23.05	\$0.00	\$75.32
07/01/2023	\$44.82	\$8.65	\$23.05	\$0.00	\$76.52
01/01/2024	\$46.02	\$8.65	\$23.05	\$0.00	\$77.72
07/01/2024	\$47.22	\$8.65	\$23.05	\$0.00	\$78.92
01/01/2025	\$48.42	\$8.65	\$23.05	\$0.00	\$80.12

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.61	\$8.65	\$0.00	\$0.00	\$29.26
2	55	\$22.67	\$8.65	\$6.27	\$0.00	\$37.59
3	60	\$24.73	\$8.65	\$6.84	\$0.00	\$40.22
4	65	\$26.79	\$8.65	\$7.41	\$0.00	\$42.85
5	70	\$28.85	\$8.65	\$19.63	\$0.00	\$57.13
6	75	\$30.92	\$8.65	\$20.20	\$0.00	\$59.77
7	80	\$32.98	\$8.65	\$20.77	\$0.00	\$62.40
8	90	\$37.10	\$8.65	\$21.91	\$0.00	\$67.66

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.21	\$8.65	\$0.00	\$0.00	\$29.86
2	55	\$23.33	\$8.65	\$6.27	\$0.00	\$38.25
3	60	\$25.45	\$8.65	\$6.84	\$0.00	\$40.94
4	65	\$27.57	\$8.65	\$7.41	\$0.00	\$43.63
5	70	\$29.69	\$8.65	\$19.63	\$0.00	\$57.97
6	75	\$31.82	\$8.65	\$20.20	\$0.00	\$60.67
7	80	\$33.94	\$8.65	\$20.77	\$0.00	\$63.36
8	90	\$38.18	\$8.65	\$21.91	\$0.00	\$68.74

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/01/2021	\$41.18	\$9.10	\$17.57	\$0.00	\$67.85
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2021	\$36.88	\$13.41	\$16.01	\$0.00	\$66.30
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

Apprentice to Journeyworker Ratio:1:5

PIPEFITTER & STEAMFITTER	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
<i>PIPEFITTERS LOCAL 537</i>						

Apprentice - PIPEFITTER - Local 537

Effective Date - 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.18	\$11.70	\$8.25	\$0.00	\$43.13
2	45	\$26.07	\$11.70	\$20.24	\$0.00	\$58.01
3	60	\$34.76	\$11.70	\$20.24	\$0.00	\$66.70
4	70	\$40.56	\$11.70	\$20.24	\$0.00	\$72.50
5	80	\$46.35	\$11.70	\$20.24	\$0.00	\$78.29

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
<i>LABORERS - ZONE 1</i>						
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY)	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
<i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>						

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PLUMBERS & GASFITTERS	03/01/2022	\$61.79	\$14.07	\$18.36	\$0.00	\$94.22
<i>PLUMBERS & GASFITTERS LOCAL 12</i>	09/04/2022	\$63.49	\$14.07	\$18.36	\$0.00	\$95.92
	02/26/2023	\$65.19	\$14.07	\$18.36	\$0.00	\$97.62
	09/03/2023	\$66.94	\$14.07	\$18.36	\$0.00	\$99.37
	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$72.34	\$14.07	\$18.36	\$0.00	\$104.77

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.63	\$14.07	\$6.63	\$0.00	\$42.33
2	40	\$24.72	\$14.07	\$7.52	\$0.00	\$46.31
3	55	\$33.98	\$14.07	\$10.24	\$0.00	\$58.29
4	65	\$40.16	\$14.07	\$12.04	\$0.00	\$66.27
5	75	\$46.34	\$14.07	\$13.85	\$0.00	\$74.26

Effective Date - 09/04/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.22	\$14.07	\$6.63	\$0.00	\$42.92
2	40	\$25.40	\$14.07	\$7.52	\$0.00	\$46.99
3	55	\$34.92	\$14.07	\$10.24	\$0.00	\$59.23
4	65	\$41.27	\$14.07	\$12.04	\$0.00	\$67.38
5	75	\$47.62	\$14.07	\$13.85	\$0.00	\$75.54

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$69.00, Step5 with lic\$76.87

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.)	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
<i>PIPEFITTERS LOCAL 537</i>						

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
<i>LABORERS - ZONE 1</i>	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
<i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>						

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

POWDERMAN & BLASTER	12/01/2021	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
<i>LABORERS - ZONE 1</i>	06/01/2022	\$43.18	\$9.10	\$17.57	\$0.00	\$69.85
	12/01/2022	\$44.18	\$9.10	\$17.57	\$0.00	\$70.85
	06/01/2023	\$45.18	\$9.10	\$17.57	\$0.00	\$71.85
	12/01/2023	\$46.43	\$9.10	\$17.57	\$0.00	\$73.10

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$42.18	\$9.10	\$17.57	\$0.00	\$68.85
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/12 (Drivers Hired After 4/30/2012) <i>TEAMSTERS 25 (Metro) - Aggregate</i>	08/01/2021	\$29.15	\$11.41	\$15.25	\$0.00	\$55.81
	05/01/2022	\$30.40	\$11.41	\$15.25	\$0.00	\$57.06
	08/01/2022	\$30.40	\$11.91	\$15.25	\$0.00	\$57.56
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 25 (Metro) - Aggregate</i>	08/01/2021	\$33.66	\$11.41	\$15.25	\$0.00	\$60.32
	05/01/2022	\$34.41	\$11.41	\$15.25	\$0.00	\$61.07
	08/01/2022	\$34.41	\$11.91	\$15.25	\$0.00	\$61.57
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofers Waterproofing &Roofers Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2022	\$47.03	\$12.28	\$19.45	\$0.00	\$78.76

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.52	\$12.28	\$5.21	\$0.00	\$41.01
2	60	\$28.22	\$12.28	\$19.45	\$0.00	\$59.95
3	65	\$30.57	\$12.28	\$19.45	\$0.00	\$62.30
4	75	\$35.27	\$12.28	\$19.45	\$0.00	\$67.00
5	85	\$39.98	\$12.28	\$19.45	\$0.00	\$71.71

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
(Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i>	02/01/2022	\$47.28	\$12.28	\$19.45	\$0.00	\$79.01
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
2	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
3	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
4	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
5	52	\$27.92	\$13.80	\$12.23	\$1.62	\$55.57
6	52	\$27.92	\$13.80	\$12.48	\$1.63	\$55.83
7	60	\$32.22	\$13.80	\$13.87	\$1.80	\$61.69
8	65	\$34.91	\$13.80	\$14.84	\$1.91	\$65.46
9	75	\$40.28	\$13.80	\$16.77	\$2.13	\$72.98
10	85	\$45.65	\$13.80	\$18.20	\$2.33	\$79.98

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.34	\$13.41	\$16.01	\$0.00	\$66.76
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.63	\$13.41	\$16.01	\$0.00	\$67.05
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone I</i>	03/01/2022	\$64.36	\$10.44	\$22.10	\$0.00	\$96.90
	10/01/2022	\$66.06	\$10.44	\$22.10	\$0.00	\$98.60
	03/01/2023	\$67.76	\$10.44	\$22.10	\$0.00	\$100.30
	10/01/2023	\$69.51	\$10.44	\$22.10	\$0.00	\$102.05
	03/01/2024	\$71.31	\$10.44	\$22.10	\$0.00	\$103.85
	10/01/2024	\$73.11	\$10.44	\$22.10	\$0.00	\$105.65
	03/01/2025	\$74.91	\$10.44	\$22.10	\$0.00	\$107.45

Classification

Effective Date

Base Wage

Health

Pension

Supplemental
Unemployment

Total Rate

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1**Effective Date -** 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.53	\$10.44	\$12.35	\$0.00	\$45.32
2	40	\$25.74	\$10.44	\$13.10	\$0.00	\$49.28
3	45	\$28.96	\$10.44	\$13.85	\$0.00	\$53.25
4	50	\$32.18	\$10.44	\$14.60	\$0.00	\$57.22
5	55	\$35.40	\$10.44	\$15.35	\$0.00	\$61.19
6	60	\$38.62	\$10.44	\$16.10	\$0.00	\$65.16
7	65	\$41.83	\$10.44	\$16.85	\$0.00	\$69.12
8	70	\$45.05	\$10.44	\$17.60	\$0.00	\$73.09
9	75	\$48.27	\$10.44	\$18.35	\$0.00	\$77.06
10	80	\$51.49	\$10.44	\$19.10	\$0.00	\$81.03

Effective Date - 10/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.12	\$10.44	\$12.35	\$0.00	\$45.91
2	40	\$26.42	\$10.44	\$13.10	\$0.00	\$49.96
3	45	\$29.73	\$10.44	\$13.85	\$0.00	\$54.02
4	50	\$33.03	\$10.44	\$14.60	\$0.00	\$58.07
5	55	\$36.33	\$10.44	\$15.35	\$0.00	\$62.12
6	60	\$39.64	\$10.44	\$16.10	\$0.00	\$66.18
7	65	\$42.94	\$10.44	\$16.85	\$0.00	\$70.23
8	70	\$46.24	\$10.44	\$17.60	\$0.00	\$74.28
9	75	\$49.55	\$10.44	\$18.35	\$0.00	\$78.34
10	80	\$52.85	\$10.44	\$19.10	\$0.00	\$82.39

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103	03/01/2022	\$44.71	\$13.00	\$18.74	\$0.00	\$76.45
	09/01/2022	\$46.42	\$13.00	\$18.87	\$0.00	\$78.29
	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.12	\$13.00	\$0.60	\$0.00	\$33.72
2	45	\$20.12	\$13.00	\$0.60	\$0.00	\$33.72
3	50	\$22.36	\$13.00	\$15.06	\$0.00	\$50.42
4	50	\$22.36	\$13.00	\$15.06	\$0.00	\$50.42
5	55	\$24.59	\$13.00	\$15.43	\$0.00	\$53.02
6	60	\$26.83	\$13.00	\$15.79	\$0.00	\$55.62
7	65	\$29.06	\$13.00	\$16.16	\$0.00	\$58.22
8	70	\$31.30	\$13.00	\$16.53	\$0.00	\$60.83
9	75	\$33.53	\$13.00	\$16.91	\$0.00	\$63.44
10	80	\$35.77	\$13.00	\$17.27	\$0.00	\$66.04

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.89	\$13.00	\$0.63	\$0.00	\$34.52
2	45	\$20.89	\$13.00	\$0.63	\$0.00	\$34.52
3	50	\$23.21	\$13.00	\$15.13	\$0.00	\$51.34
4	50	\$23.21	\$13.00	\$15.13	\$0.00	\$51.34
5	55	\$25.53	\$13.00	\$15.51	\$0.00	\$54.04
6	60	\$27.85	\$13.00	\$15.88	\$0.00	\$56.73
7	65	\$30.17	\$13.00	\$16.26	\$0.00	\$59.43
8	70	\$32.49	\$13.00	\$16.62	\$0.00	\$62.11
9	75	\$34.82	\$13.00	\$17.00	\$0.00	\$64.82
10	80	\$37.14	\$13.00	\$17.37	\$0.00	\$67.51

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2022	\$56.09	\$11.39	\$22.34	\$0.00	\$89.82
BRICKLAYERS LOCAL 3 - MARBLE & TILE						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.34	\$0.00	\$61.78
2	60	\$33.65	\$11.39	\$22.34	\$0.00	\$67.38
3	70	\$39.26	\$11.39	\$22.34	\$0.00	\$72.99
4	80	\$44.87	\$11.39	\$22.34	\$0.00	\$78.60
5	90	\$50.48	\$11.39	\$22.34	\$0.00	\$84.21

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.58	\$9.10	\$17.72	\$0.00	\$69.40
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.30	\$9.10	\$17.72	\$0.00	\$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.92	\$13.41	\$16.01	\$0.00	\$67.34
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$53.41	\$9.10	\$18.17	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$55.41	\$9.10	\$18.17	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$45.48	\$9.10	\$18.17	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$47.48	\$9.10	\$18.17	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2021	\$37.34	\$13.41	\$16.01	\$0.00	\$66.76
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
	06/01/2022	\$42.43	\$9.10	\$17.57	\$0.00	\$69.10
	12/01/2022	\$43.43	\$9.10	\$17.57	\$0.00	\$70.10
	06/01/2023	\$44.43	\$9.10	\$17.57	\$0.00	\$71.10
	12/01/2023	\$45.68	\$9.10	\$17.57	\$0.00	\$72.35
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 1 (HEAVY & HIGHWAY)</i>	12/01/2021	\$41.43	\$9.10	\$17.57	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/01/2022	\$63.39	\$13.57	\$17.26	\$0.00	\$94.22
	09/04/2022	\$63.49	\$14.07	\$18.36	\$0.00	\$95.92
	02/26/2023	\$65.19	\$14.07	\$18.36	\$0.00	\$97.62
	09/03/2023	\$66.94	\$14.07	\$18.36	\$0.00	\$99.37
	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$72.34	\$14.07	\$18.36	\$0.00	\$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$29.67	\$9.25	\$1.89	\$0.00	\$40.81
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$10.27	\$0.00	\$61.55
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$34.62	\$9.25	\$10.07	\$0.00	\$53.94
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$14.35	\$0.00	\$65.63
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$37.09	\$9.25	\$10.87	\$0.00	\$57.21
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$22.25	\$9.25	\$1.82	\$0.00	\$33.32
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$49.45	\$9.25	\$17.48	\$0.00	\$76.18

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 08/30/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.67	\$9.25	\$3.39	\$0.00	\$42.31
2	65	\$32.14	\$9.25	\$3.46	\$0.00	\$44.85
3	70	\$34.62	\$9.25	\$3.54	\$0.00	\$47.41
4	75	\$37.09	\$9.25	\$5.11	\$0.00	\$51.45
5	80	\$39.56	\$9.25	\$5.19	\$0.00	\$54.00
6	85	\$42.03	\$9.25	\$5.26	\$0.00	\$56.54
7	90	\$44.51	\$9.25	\$7.34	\$0.00	\$61.10

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)
Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

- ** Multiple ratios are listed in the comment field.
- *** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
- **** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

CRIMINAL OFFENDER RECORD INFORMATION (CORI) & FORMS

1 CORI SCREENING BY VENDORS OF THE TOWN OF ARLINGTON

1.1 Purpose

These sections are intended to ensure that the persons and businesses supplying goods and/or services to the Town of Arlington deploy fair policies relating to the screening and identification of persons with criminal backgrounds through the CORI System.

1.2 Definitions

Unless specifically indicated otherwise, these definitions shall apply and control in CBC 4-7.

Applicant means any current or prospective employee, licensee, or volunteer and includes all persons included in 803 CMR 2.03.

Awarding Authority means any department, agency, or office of the Town of Arlington that purchases goods and/or services from a vendor.

CHSB means the Criminal History Systems Board defined by MGL c^ and 803 CMR 2.00

Town means the Town of Arlington or department, agency, or office thereof

Otherwise qualified means any applicant that meets all other criteria for a position or consideration for a position.

Vendor means any vendor, contractor, or supplier of goods and/or services to the Town of Arlington.

1.3 CORI-Related Standards of the Town of Arlington

The Town of Arlington will do business only with vendors that have adopted and employ CORI-related policies, practices, and standards that are consistent with Town Standards.

The Town of Arlington employs CORI-related policies and practices that are fair to all persons involved and seeks to do business with vendors that have substantially similar policies and practices. The Awarding Authority shall review all vendors' CORI policies for consistency with Town Standards. The Awarding Authority shall consider all vendors' CORI standards as part of the criteria to be evaluated in the awarding of a contract and will consider a vendor's execution of the CORI standards to be evaluated among the performance criteria of a contract. The Awarding Authority shall consider any vendor's deviation from the CORI standards as grounds for rejection, rescission, revocation, or any other termination of the contract.

The CORI-related policies and practices of the Town include, but are not limited to:

- a. The Town does not conduct a CORI check on an applicant unless a CORI check is required by law or the Town has made a good faith determination that the relevant position is of such sensitivity that a CORI report is warranted.
- b. The Town reviews the qualifications of an applicant and determines that an applicant is otherwise qualified for the relevant position before the Town conducts a CORI check. The Town does not conduct a CORI check for an applicant that is not otherwise qualified for a relevant position.
- c. If the Town has been authorized by the CHSB to receive CORI reports consisting solely of conviction and case-pending information and the CORI report received by the Town contains other information (i.e., cases

disposed favorably for the applicant such as not guilty, dismissal) then the Town informs the applicant and provides the applicant with a copy of CHSB's information for the applicant to pursue correction.

- a. When the Town receives a proper CORI report of an applicant that contains only the CORI information that the Town is authorized to receive and the Town is inclined to refuse, rescind, or revoke the offer of a position to an applicant then the Town fully complies with 803CMR 6.11 by, including but not limited to, notifying the applicant of the potential adverse employment action, providing the applicant with a photocopy of the CORI report received by the Town, informing the applicant of the specific parts of the CORI report that concern with the Town including an opportunity for the applicant to present information rebutting the accuracy and/or relevance of the CORI report, reviewing any information and documentation received from the applicant, and documenting all steps taken to comply with 803 CMR 6.11.
- e. The Town makes final employment related decisions based on all of the information available to the Town, including the seriousness of the crime(s), the relevance of the crime(s), the number of crime(s), the age of the crime(s), and the occurrences in the life of the applicant since the crime(s). If the final decision of the Town is averse to the applicant and results in the refusal, rescission, or revocation of a position with the Town then the Town promptly notifies the applicant of the decision and the specific reason(s) therefor.

1.4 Waiver

Under exigent circumstances, an Awarding Authority, by its highest-ranking member, may grant a waiver of CBC 4-7.3 on a contract-by-contract basis and shall submit a written record of the waiver to the Office of Civil Rights and to the Boston Town Council's Staff Director who shall provide a copy to each and every Town Councilor. The written record shall include, but not limited to, (a) a summary of the terms of the contract, (b) the details of the vendor's failure or refusal to conform with the Town's CORI-related standards, and (c) a brief analysis of the exigency causing the grant of waiver.

No waiver may be considered perfected unless the Awarding Authority fully complies with the provisions of this sub-section.

1.5 Data Collection and Report

Any Awarding Authority, vendor, applicant or other interested party may contact the Office of Civil Rights to report any problems, concerns, or suggestions regarding the implementation, compliance, and impacts of these sections, and the Office of Civil Rights shall log every comment received with a summary of the comment and shall keep on file any written comments. Subsequent to logging any comment, the Office of Civil Rights may refer a complaint to the CHSB and shall notify the relevant Awarding Authority. The Office of Civil Rights shall prepare a written report including, but not limited to, a summary of the granted waivers, a summary of any feedback regarding CORI-related policies and/or practices, and any other information or analysis deemed noteworthy by the Directory of the Office of Civil Rights. The Office of Civil Rights shall file the report with the Boston Town Council via the Boston Town Clerk every six (6) months from the implementation date of these sections.

1.6 Applicability

If any provision of these sections imposes greater restrictions or obligations than those imposed by any other general law, special law, regulation, rule, ordinance, order, or policy then the provisions of these sections shall control.

1.4 Regulatory Authority

The Office of Civil Rights shall have the authority to promulgate rules and regulations necessary to implement and enforce these sections and may promulgate a form of the affidavit.

1.5 Severability

If a provision of these sections shall be held to be invalid by a court of competent jurisdiction, then such provision shall be considered separately and apart from the remaining provisions, which shall remain in full force and effect.

CM FORM 15A: CORI COMPLIANCE

The Town of Arlington intends to ensure that persons and businesses supplying goods and/or services to the Town deploy fair policies relating to the screening and identification of person with criminal backgrounds through the CORI system. Vendors entering into contracts with the town must affirm that their policies regarding CORI information are consistent with the standards set by the Town of Arlington.

CERTIFICATION

The undersigned certifies under penalties of perjury that the vendor is in compliance with the Town of Arlington as currently in effect. **All Vendors must check one of the three lines below.**

1. _____ CORI checks are not performed on any Applicants.
2. _____ CORI checks are performed on some or all Applicants. The Vendor, by affixing a signature below, affirms under penalties of perjury that its CORI policy is consistent with the standards set forth on the attached CM Form 15B.
3. _____ CORI checks are performed on some or all Applicants. The Vendor's CORI policy is not consistent with the standards set forth on the attached CM Form 15B (a copy of the Vendor's written CORI policy must accompany this form).

(Typed or printed name of person signing
quotation, bid or proposal)

Signature

(Name of Business)

NOTE:

The Awarding Authority may grant a waiver of CBC 4-7.3 under exigent circumstance on a contract-by-contract basis.

Instructions for Completing CM Form 15B:

A Vendor should not check Line 1 unless it performs NO CORI checks on ANY applicant. A Vendor who checks Lines 2 certifies that the Vendor's CORI policy conforms to the standards set forth in CM Form 15B. A Vendor with a CORI policy that does NOT conform to the standards set forth on CM Form 15B must check Line 3. Vendors who check Line 3 will not be permitted to enter into contracts with the City, absent a waiver, as provided for in CBC 4-7.4. For any waiver to be granted, a completed CM Form 15C must be completed by the awarding authority and attached hereto.

CM FORM 15B: CORI COMPLIANCE STANDARDS

By checking line 2 on the foregoing CM Form 15A, the Vendor affirms that its CORI-related policies, practices, and standards are consistent with the following standards:

1. The Vendor does not conduct a CORI check on an Applicant unless a CORI check is required by law or the Vendor has made a good faith determination that the relevant position is of such sensitivity that a CORI report is warranted.
2. The Vendor reviews the qualifications of an Applicant and determines that an Applicant is otherwise qualified for the relevant position before the Vendor conducts a CORI check. The Vendor does not conduct a CORI check for an Applicant that is not otherwise qualified for a relevant position.
3. If the Vendor has been authorized by the CHSB to receive CORI reports consisting solely of conviction and case-pending information and the CORI report received by the Vendor contains other information (i.e. cases disposed favorably for the Applicant such as Not Guilty, Dismissal) then the Vendor informs the Applicant and provides the Applicant with a copy of CHSB's information for the Applicant to pursue correction.
4. When the Vendor receives a proper CORI report of an Applicant that contains only the CORI information that the Vendor is authorized to receive and the Vendor is inclined to refuse, rescind, or revoke the offer of a position to an Applicant, then the Vendor complies with 803 CMR 6.11 by, including, but not limited to, notifying the Applicant of the potential adverse employment action, providing the Applicant with a photocopy of the CORI report received by the Vendor, informing the Applicant of the specific parts of the CORI report that concern the Vendor, providing an opportunity for the Applicant to discuss the CORI report with the Vendor including an opportunity for the Applicant to present information rebutting the accuracy and/or relevance of the CORI report, reviewing any information and documentation received from the Applicant, and documenting all steps taken to comply with 803 CMR 6.11.
5. The Vendor makes final employment-related decisions based on all of the information available to the Vendor, including the seriousness of the crime(s), the relevance of the crime(s), the age of the crime(s), and the occurrences in the life of the Applicant since the crime(s). If the final decision of the Vendor is adverse to the Applicant and results in the refusal, rescission, or revocation of a position with the Vendor then the Vendor promptly notifies the Applicant of the decision and the specific reasons therefor.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. *Bonds*--Performance and payment bonds and other instruments of security.

9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the

Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *ENGINEER*--The individual or entity named as such in the Agreement.

20. *ENGINEER's Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens--Charges*, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

30. *OWNER*--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated biphenyls.

33. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. *Site*--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

41. *Specifications*--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

42. *Subcontractor*--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

43. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

44. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

45. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

47. *Unit Price Work*--Work to be paid for on the basis of unit prices.

48. *Work*--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. *Work Change Directive*--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. *Written Amendment*--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms “as allowed,” “as approved,” or terms of like effect or import are used, or the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. Day

1. The word “day” shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. Defective

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other

specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, “provide” is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02* Copies of Documents

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times com-

mence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

*See Supplementary Conditions

2.05* *Before Starting Construction*

A. *CONTRACTOR's Review of Contract Documents:* Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. *Preliminary Schedules:* Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and
3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into

component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

* C. *Evidence of Insurance:* Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with Article 5.

2.06 *Preconstruction Conference*

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.

2. CONTRACTOR's schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

*See Supplementary Conditions

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01* *Intent*

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

3.02 *Reference Standards*

A. *Standards, Specifications, Codes, Laws, and Regulations*

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER's Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of - the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or

*See Supplementary Conditions

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order; (ii) ENGINEER's approval of a Shop Drawing or Sample; or (iii) ENGINEER's written interpretation or clarification.

3.05 *Reuse of Documents*

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or

restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02* *Subsurface and Physical Conditions*

A.* *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, includ-

ing, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

*See Supplementary Conditions

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *ENGINEER's Review:* After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the

necessity of OWNER's obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be

made therefor as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

- a. reviewing and checking all such information and data,

- b. locating all Underground Facilities shown or indicated in the Contract Documents,

- c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

- d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or

performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price of Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05* *Reference Points*

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

*See Supplementary Conditions

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition;

(ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or

Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.E shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

*See Supplementary Conditions

ARTICLE 5 - BONDS AND INSURANCE

5.01* *Performance, Payment, and Other Bonds*

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.

B.* All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Compa-

nies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

5.04* *CONTRACTOR's Liability Insurance*

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to

perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;
4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

*See Supplementary Conditions

1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

5.05 *OWNER's Liability Insurance*

A.* In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06* *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property

insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

*See Supplementary Conditions

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;

5. allow for partial utilization of the Work by OWNER;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with

30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B.* OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C.* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.

D.* OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E.* If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraph 5.06, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the Site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.07 *Waiver of Rights*

A.* OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and all other

individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused.

None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

B. OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:

*See Supplementary Conditions

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by OWNER; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to

paragraph 14.05, after Substantial Completion pursuant to paragraph 14.04, or after final payment pursuant to paragraph 14.07.

C. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, ENGINEER, or ENGINEER's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

5.08* *Receipt and Application of Insurance Proceeds*

A.* Any insured loss under the policies of insurance required by paragraph 5.06 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.08.B. OWNER shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

B.* OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

5.09* *Acceptance of Bonds and Insurance; Option to Replace*

A.* If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the

certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with

*See Supplementary Conditions

the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of

construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 *Labor; Working Hours*

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the

Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly

run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. *"Or-Equal" Items:* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be

considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items*

a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify

that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a

substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. *Special Guarantee:* OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

E. *ENGINEER's Cost Reimbursement:* ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

F. *CONTRACTOR's Expense:* CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement

for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control

CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR

TOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 *Patent Fees and Royalties*

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out

of or relating to any infringement of patent rights or

copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for

the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 *Laws and Regulations*

A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

6.10* *Taxes*

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11* *Use of Site and Other Areas*

A.* *Limitation on Use of Site and Other Areas*

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations,

*See Supplementary Conditions

and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures*: CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 *Safety and Protection*

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17* *Shop Drawings and Samples*

A.* CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B.* CONTRACTOR shall also submit six (6) Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or

*See Supplementary Conditions

Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. *ENGINEER's Review*

1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER's review and approval will be only to determine if the items covered by the submittals

will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. *Resubmittal Procedures*

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 *Continuing the Work*

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 *CONTRACTOR's General Warranty and Guarantee*

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or

2. normal wear and tear under normal usage.

B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;

2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;

4. use or occupancy of the Work or any part thereof by OWNER;

5. any acceptance by OWNER or any failure to do so;

6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by OWNER.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.

B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER's Consultants or to the officers, directors, partners, employees, agents, and

other consultants and subcontractors of each and any of them arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

ARTICLE 7 - OTHER WORK

7.01 Related Work at Site

A. OWNER may perform other work related to the Project at the Site by OWNER's employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of

such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
2. the specific matters to be covered by such authority and responsibility will be itemized; and
3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 *Replacement of ENGINEER*

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 *Furnish Data*

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 *Pay Promptly When Due*

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

*See Supplementary Conditions

8.06* *Insurance*

A.* OWNER's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. OWNER's responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 *Limitations on OWNER's Responsibilities*

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *OWNER'S Representative*

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

9.02 *Visits to Site*

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and

observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03* *Project Representative*

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or employee,

*See Supplementary Conditions

the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Clarifications and Interpretations*

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Docu-

ments. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 *Authorized Variations in Work*

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 *Rejecting Defective Work*

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 *Shop Drawings, Change Orders and Payments*

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 *Determinations for Unit Price Work*

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

*See Supplementary Conditions

9.10 *Limitations on ENGINEER's Authority and Responsibilities*

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such

authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants. See Article 18.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the

applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 *Claims and Disputes*

A. *Notice:* Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. *ENGINEER's Decision:* ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or
2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days

after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work

shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of

CONTRACTOR's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.

3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

C. *CONTRACTOR's Fee:* When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGI NEER an itemized cost breakdown together with supporting data.

11.02 *Cash Allowances*

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of

Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
2. there is no corresponding adjustment with respect any other item of Work; and
3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01* *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B.* The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or
2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or
3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. *CONTRACTOR's Fee:* The CONTRACTOR's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;

b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

*See Supplementary Conditions

d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones)

will be determined in accordance with the provisions of this Article 12.

12.03 *Delays Beyond CONTRACTOR's Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 *Delays Within CONTRACTOR's Control*

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 *Delays Beyond OWNER's and CONTRACTOR's Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 *Delay Damages*

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR; or

2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility

owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02* *Access to Work*

A. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.03* *Tests and Inspections*

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B.* OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in

question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

*See Supplementary Conditions

13.05 *OWNER May Stop the Work*

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 *OWNER May Correct Defective Work*

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice

to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The schedule of values established as provided in paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A.* *Applications for Payments*

1. At least 20 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to pro-gress payments will be as stipulated in the Agreement.

*See Supplementary Conditions

B. *Review of Applications*

1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties

that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

D. Reduction in Payment

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

c. there are other items entitling OWNER to a set-off against the amount recommended; or

d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 *CONTRACTOR's Warranty of Title*

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion,

ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other

indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. *Review of Application and Acceptance*

1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 *Final Completion Delayed*

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not

fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *OWNER May Suspend Work*

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 *OWNER May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR's disregard of the authority of ENGINEER; or

4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in paragraph 15.02.A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 *OWNER May Terminate For Convenience*

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *CONTRACTOR May Stop Work or Terminate*

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon

seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION*

16.01 *Methods and Procedures*

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS*

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to

exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

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SUPPLEMENTARY CONDITIONS

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10	CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES
. 11	TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK
12	PAYMENTS TO CONTRACTOR AND COMPLETION
13	SUSPENSION OF WORK AND TERMINATION
14	MISCELLANEOUS

SUPPLEMENTARY CONDITIONS

AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8, 1996 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE I. DEFINITIONS AND TERMINOLOGY

Add the following language at the beginning of definition I.QI A.12 entitled "Contract Documents" in the General-Conditions:

"The Advertisement for Bids, Instructions to Bidders, State Regulations, ..."

Delete the words "The individual or entity named as such in the Agreement" in 1.01.A.19 and insert the following in their place:

"The individual or entity duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly appointed representatives."

Delete the words "and who is identified as such in the Supplementary Conditions" at the end of definition 1.01 A.20, entitled "ENGINEER'S Consultant."

Delete definition 1.01 A.41 entitled "Specifications" in the General Conditions in its entirety and insert the following in its place:

"Sections included under Division 1 through Division 16 of the

Contract Documents:" **ARTICLE 2. PRELIMINARY MATTERS**

SC-2.05

Delete paragraph 2.0SC of the General Conditions in its entirety and insert the following in its place:

"C. Evidence of Insurance: CONTRACTOR shall deliver to OWNER, with a copy to the ENGINEER, Certificates of Insurance within 10 days after receipt of the notice of the acceptance of bid (and other evidence requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with the requirements of Article 5."

ARTICLE 3. CONTRACT DOCUMENTS: INTENT,
AMENDI NG, REUSE SC-3.0

Add the following sentence at the end of Paragraph 3.01A of the General Conditions:

"...by all. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion."

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND
PHYSICAL CONDITIONS; REFERENCE POINTS

SC-4.02

Delete the term "Supplementary Conditions" of paragraph 4.02 A of the General Conditions and replace it with "Contract Documents".

SC-4.04

Change "of" to "or" on line 6 of paragraph 4.04 B.2 of the General Conditions. Delete the following words from lines 8 and 9 of paragraph 4.04 82 of the General Conditions:

"...Or not shown or indicated with

reasonable accuracy..." SC-4.05

Add a new paragraph immediately after paragraph 4.05A of the General Conditions which is to read as follows:

A. ENGINEER may check the lines elevations and reference marks set by CONTRACTOR, and CONTRACTOR shall correct any errors disclosed by such check.
Such a check shall not be considered" as approval of CONTRACTOR'S work and shall not relieve CONTRACTOR of the responsibility for construction of the entire Work in accordance with the Contract Documents. CONTRACTOR shall furnish personnel to assist ENGINEER in checking lines and grades."

SC-4.06

Delete the term Supplementary Conditions in paragraph 4.06A of the General Conditions and replace it with "Contract Documents".

ARTICLE 5.

BOND AND

INSURANCE

NOTICE TO

CONTRACTOR:

1. Proof of Insurance coverage shall be furnished to the OWNER in accordance with the schedule for submittal of Bonds and Agreements.
2. Additionally, refer to Article 2. PRELIMINARY MATTERS, Paragraph SC-2.05.C

SC-5.01

Insert these sentences following SC-5.01.A: The Surety Company providing the bonds shall have a rating of A or better within the Best Key Rating Guide and be licensed by the Massachusetts Division of Insurance. The contractor shall pay the premiums for such Bonds.

SC-5.03

Delete the second sentence following SC-5.03.A: of the General Conditions, which beings "OWNER shall deliver to..."

SC-5.04

The limits of liability for the insurance required by paragraph 5.04A of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:

5.4 A.1 and 5.04 A.2 Worker's Compensation

- | | |
|---------------------------------------|-------------------------------|
| (1) Worker's Compensation | Statutory Requirements |
| (2) Coverage B - Employer's Liability | \$100,000/\$500,000/\$100,000 |

5.04 A.3, 5.04 A.4, and 5.04 A.5 Commercial General Liability Limits shall include Coverage for... independent Contractors, Personal Injury, Owners and Contractors Protective Liability, Explosion, Underground and Collapse, Broad Form Property Damage, Blanket Contractual Liability per locations/project endorsement.

- | | |
|-------------------------------|-------------------------|
| Commercial General Liability | \$1,000,000/\$2,000,000 |
| Products/completed Operations | \$2,000,000 Aggregate |

5.4 A.6 Automobile Liability for owned, hired and non-owned vehicles:

- | | |
|---------------------|--|
| (1) Bodily injury: | \$1,000,000/\$1,000,000 Each person
\$1,000,000/\$1,000,000 Each accident |
| (2) Property damage | \$1,000,000 Each occurrence |
| (3) | |

The following indemnity agreement: shall be made part of this contract:

1. To the fullest extent permitted by law, Contractor(s) hereby acknowledges and agrees that it shall indemnify, hold harmless and defend the Engineer, the Owner, the Engineer and any of their officers, directors, employees, agents, affiliates, subsidiaries and partners from and against all-claims, damages, losses and expenses, including but not limited to, attorney's fees, arising out of or resulting from the performance of the contractor's work under this contract, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury to or destruction of tangible property (other than to the work itself) including loss of use resulting therefrom, and (2) is (CAUSED) in whole or in part by any negligent acts omissions of the contractor, its employees, agents or

contractors or anyone directly or indirectly employed by any of them, or anyone whose acts any of them may be liable.

2. The Contractor hereby acknowledges its obligation under the foregoing paragraph to indemnify the Engineer and Owner against judgments suffered because of the contractor's work and to assume the cost of defending the Engineer and Owner against claims as described in the foregoing paragraph.

A. Engineer and Owner shall be named as Additional Insured on contractors General Liability and Umbrella Liability Contractors.

The Contractual Liability required by paragraph s.04n.4 of the General Conditions shall provide coverage for not less than the following amounts:

(1) Bodily injury:	\$1,000,000 Each occurrence
	\$1,000,000 Annual aggregate

(2) Property damage, including explosion, collapse and underground coverage:	\$1,000,000 Each occurrence
	\$1,000,000 Annual aggregate

SC-5.04

Add two new paragraphs immediately after paragraph 5.04B of the General Conditions, which are to read as follows:

"C. The CONTRACTOR shall also provide:

1. CONTRACTOR shall, as a minimum, purchase and maintain excess liability insurance in the umbrella form with a combined single limit of not less than \$5,000,000 per claim and in the aggregate. Evidence of such excess liability shall be delivered to OWNER in accordance with paragraph 2.0SC in the form of a certificate indicating the policy numbers and limits of liability of all underlying insurance.

A. General Liability, Workers' Compensation, Automobile Liability and Umbrella Liability Policies will contain waivers of subrogation in favor of the Engineer and Owner.

2. If the aggregate limits of liability indicated in CONTRACTOR' insurance provided in accordance with paragraphs 5.03 and 5.04 are not sufficient to cover all claims for damages arising from his operations under this Contract and from any other work performed by him or if policies of insurance do not provide that the aggregate limits of liability for bodily injury and property damage apply to each contract or project separately, CONTRACTOR shall have such policies amended so that the aggregate limits of liability required by this Contract will be available to cover all claims for damages due to operations under this Contract."

SC-5.05

Delete paragraph 5 .05 of the General Conditions in its entirety.

SC-5.06

Delete Paragraph 5.06 A of the General Conditions in its entirety and insert the following in its place:

"A. CONTRACTOR shall purchase and maintain, until final payment, property insurance upon the Work at the site in an amount equal to the total bid price for the completed construction. This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEERS consultants in the Work, shall insure against the perils of fire and extended coverage, shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and shall include damages, losses and expenses rising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). This insurance shall be provided on the completed value form.' If not covered under the "all risk" insurance or otherwise provided in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment." A \$20,000 deductible shall be acceptable. Any other deductible amount shall be approved in advance by the OWNER and any deductible amount shall be borne by the CONTRACTOR.

Delete paragraph 5.068 of the General Conditions in its entirety.

Delete Paragraph 5.06C of the General Conditions in its entirety and insert the following in its place:

"C. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER by certified mail and will contain waiver provisions in accordance with paragraph 5.078. The words "**Endeavor to**" shall be struck from the Certificate of Insurance in the Cancellation Statement"

Delete paragraph 5.06D of the General Conditions in its entirety. Delete paragraph

5.06E of the General Conditions in its entirety.

SC-5.07

Amend the last sentence of paragraph 5.07A of the General Conditions by striking out the words "held by OWNER as trustee or." As so amended, paragraph 5.07A remains in effect.

SC-5.08

Delete paragraph 5.08A of the General Conditions in its entirety. Delete paragraph 5.0813 of the General Conditions in its entirety.

SC-5.09

Delete paragraph 5.09A of the General Conditions in its entirety and insert the following in its place:

"A. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with this Article 5 on the basis of its not complying with the Contract Documents, OWNER will notify CONTRACTOR in writing thereof within thirty days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.0SC. CONTRACTOR will provide such additional information in respect of insurance provided by him as OWNER may reasonably request."

ARTICLE 6. CONTRACTOR'S

RESPONSIBILITIES SC-6.01

Delete paragraph 6.01B of the General Conditions in its entirety and replace with the following:

"B. At the site of the Work the CONTRACTOR shall employ a full-time construction superintendent or foreman who shall have full authority to act for the CONTRACTOR. It is understood that such representative shall be acceptable to the ENGINEER and shall be one who will be continued in the capacity for the particular job involved unless the representative ceases to be on the CONTRACTOR'S payroll. If at any time during the Work the representative is deemed by the ENGINEER to be no longer acceptable, the representative shall be promptly replaced by the CONTRACTOR. All communications to the superintendent shall be as binding as if given to the CONTRACTOR."

SC-6.04

Add the following paragraph after paragraph 6.04 A.2 of the General Conditions: -

"B. The CONTRACTOR's resident superintendent shall attend monthly progress meetings at the site of the work with the ENGINEER and others as appropriate to review schedule status and such other pertinent subjects as may be listed on the agenda by the ENGINEER."

SC-6.17

In paragraph 6.17 E.1 of the General Conditions, delete the word "timely" from the first line.

SC-6.20

Delete paragraph 6.20A of the General Conditions in its entirety and replace with the following:

"A. To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the OWNER, the ENGINEER, ENGINEER'S consultants, and their agents and employees from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, but only to the extent caused in whole or in part by acts or omissions of the CONTRACTOR, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

Such obligation shall apply to any such claims, damages, losses, and expenses which arise and/or are incurred by any person or entity either during the performance of the Work and/or after completion of construction. Nothing in this paragraph shall be construed to negate, abridge, or reduce other rights or obligations of indemnity or contribution which would otherwise exist as to a party or person indemnified hereunder. CONTRACTOR hereby assumes the responsibility and liability for injury to or death of any and all persons, including the CONTRACTOR's employees, and for any and all damage to property caused by, resulting from, or arising out of any act, omission or neglect on the part of the CONTRACTOR, or of any Subcontractor or of anyone directly or indirectly employed by any of them or of anyone for whose acts, any of them may be liable."

Delete paragraph 6.20C of the General

Conditions in its entirety. ARTICLE 8.

OWNER'S RESPONSIBILITIES

SC-8.06

Delete paragraph 8.06A of the General Conditions in its entirety. ARTICLE 9.
ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.01

Add a new paragraph 9.0113 after paragraph 9.01A of the General Conditions, which is to read as follows:

"B. Nothing contained in the Contract Documents shall be construed to create a contractual relationship of any kind (1) between the ENGINEER and CONTRACTOR, (2) between the OWNER and a Subcontractor or Subcontractors, or (3) between any

person or entities other than the OWNER and CONTRACTOR. The ENGINEER shall, however, be entitled to performance and enforcement of obligations under the CONTRACT DOCUMENTS intended to facilitate performance of the ENGINEERS duties."

ARTICLE 11. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

Delete Article 11 of the General Conditions in its entirety and replace with the following:

"A. The unit price of an item of Unit Price work shall be subject to reevaluation and adjustment under the following conditions:

(1) If the total extended bid price [Estimated Quantity times the Bid Unit Price] of a particular item of Unit Price Work amounts to 5 percent or more of the Original Contract Price and the variation in the quantity of the particular item of Unit Price Work performed by CONTRACTOR differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement;
And

If there is no corresponding adjustment with respect to any other item of work; and

(2) If CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11- if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed. If OWNER believes that the quantity variation entitles OWNER to an adjustment in the unit price, OWNER shall be entitled to an adjustment in the unit price in an amount determined by the ENGINEER. ENGINEER shall not be liable in connection with any determination relating to adjustments which is rendered in good faith."

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.06

Add the following new paragraphs after paragraph 12.06 of the General Conditions:

"12.07 Liquidated Damages:

A. If the CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this Contract, to pay to the OWNER the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contract shall be in default after the time stipulated in the Contract for completing the work. Such damages may be retained from time to time by the OWNER from progress payments or any amounts owing to the CONTRACTOR, or otherwise collected.

B. The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and said amount is agreed to be the amount of damages which the OWNER would sustain and

said amount shall be retained from time to time by the OWNER from current periodical estimates.

C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided that the CONTRACTOR shall not be charged with liquidated damages of any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR'S reasons for the time extension are acceptable to the OWNER; Provided, further, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

- 1) to any preference, priority or allocation order duly issued by the Government;
- 2) to unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and
- 3) to any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections C(1) and C(2) above;

D. Provided, further, that the CONTRACTOR shall, within ten (10) days from the beginning of such delay, unless the OWNER shall grant a further period of time prior to the date of final settlement of the Contract, notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter."

ARTICLE 13. TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-13.07

Delete paragraph 3.07A of the General Conditions and insert the following in its place:

"A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such defective work, or, if it has been rejected by OWNER, remove it from the site and replace it with work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other work or the work of others therefrom. If CONTRACTOR does not begin the repairs ten (10) days of receipt of written notification and promptly comply with the terms of OWNER's written instructions, or in an emergency when delay would cause serious risk, loss or

damage, OWNER may have the defective work corrected or the rejected work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR."

SC-13.09

Revise paragraph 13.09A of the General Conditions

A. Delete the word "seven" and replace it with the word "ten" so that it reads "alter ten days written notice to CONTRACTOR."

ARTICLE 14. PAYMENTS TO CONTRACTOR

AND COMPLETION SC-14.02

Delete paragraph 14.02A.3 and insert the following in its place:

"3. Retainage with respect to progress payments will be five percent or, if stipulated, the maximum allowed by law."

Add Paragraph 4. to read as follows:

"4. The CONTRACTOR shall submit Weekly Payroll Records Report and Statement of

Compliance verifying compliance with the Minimum Prevailing Wage Law, MGL Ch. 149, Sections 26-27H. "These Statements of Compliance shall be submitted as a condition of payment for work performed during the period the reports apply."

SC-14.03

Delete paragraph 14.03A in its entirety and insert the following in its place:

"A CONTRACTOR warrants and guarantees that title to all work, material and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than at the time of Application for Payment free and clear of all liens.

CONTRACTOR shall provide written transfer of title and a certified paid invoice provided by the supplier."

ARTICLE 15. SUSPENSION OF WORK

AND TERMINATION SC-15.02

Add a new paragraph immediately after paragraph 15.02 AA of the General Conditions which is to read as follows:

"5. If the Work to be done under this Contract shall be abandoned, or if this Contract or any part thereof shall be sublet, without the previous written consent of OWNER, or if the contract or any claim thereunder shall be assigned by CONTRACTOR otherwise than as herein specified;"

ARTICLE 17. MISCELLANEOUS

SC-17.06, 17.07, 17.08, 17.09

Add the following new paragraphs after paragraph 17.05 of the

General Conditions: "17.06 Assignment:

A. The CONTRACTOR shall not assign the whole or any part of this Contract or any moneys due or to become due hereunder until thirty (30) days prior notice in writing has been given to the OWNER of the intention to assign, which notice shall state the identity and address of the prospective assignee. No assignment shall be made without the OWNER's prior written consent. Such consent shall not be unreasonably withheld. In case the CONTRACTOR assigns all or any part of the moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the CONTRACTOR shall be subject to prior claims of all persons, firms and corporations of services rendered or materials supplied for the performance of the work called for in this Contract."

17.7 Liability

It is understood and agreed that members of the OWNER or the ENGINEER or any agent or employees of the OWNER signing this Agreement shall not be personally liable hereunder for any action incurred in connection with this Agreement.

17.7 State Statutes and Regulations

See Superseding Changes to General & Supplementary Conditions 12/29/04 for further modifications of the General Conditions due to state statutes and regulations.

17.8 Severability

If any provision of this Agreement shall be invalid or unenforceable to any extent or in any application, then the remainder of this Agreement and of such terms and conditions, except to such extent or in such application, shall not be affected thereby, and each and every term and condition of this Agreement shall be valid and enforced to the fullest extent and in the broadest application permitted by law."

END OF SECTION

STATE STATUTES AND REGULATIONS COMMONWEALTH OF MASSACHUSETTS

A. REVISIONS TO GENERAL CONDITIONS

1. Definitions
2. Subsurface Conditions Found Different
3. Subcontracting
4. Permits
5. Contractor Records
6. Massachusetts Sales and Use Tax
7. Clarifications and Interpretations
8. Change of Contract Price
9. Payments
10. Suspension of Work and Termination
11. Labor Classification and Minimum Wage Rates

B. OTHER REGULATORY REQUIREMENTS

1. Working Hours
2. DEP

Community Sound Level Criteria ATTACHMENT A

– Wage Rates

ATTACHMENT B

Excerpts from Chapter 149 and Chapter 30 of the

Massachusetts General Law ATTACHMENT C

Special Provisions for Minority/Women Business Enterprises and the Commonwealth of Massachusetts Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program.

ATTACHMENT D--

Change Orders

A. REVISIONS TO GENERAL CONDITIONS:

1. Definitions

The term "AWARDING AUTHORITY," as used herein, shall be considered to be synonymous with the term "OWNER," described in definition 1.01 A.30.

Delete definition 1.01 A.43 entitled "Substantial Completion" in the General Conditions in its entirety and insert the following in its place:

"Substantial Completion shall be interpreted in accordance with Massachusetts General Law Chapter 30, Section 39G or -39K as appropriate."

2. Subsurface Conditions Found Different

Add the following sentence to the end of paragraph 4.03A of the General Conditions:

"...to do so. Adjustments resulting from subsurface or latent physical conditions will be in accordance with Massachusetts General Law Chapter 30, Section 39N."

3. Subcontracting

Add the following language at the end of paragraph 6.06F of the General Conditions:

"Except as required otherwise by Massachusetts General Law Chapter 149, Section 44F, for Work governed by Chapter 149, sections 44A through 44H."

4. Permits

Delete paragraph 6.08A of the General Conditions in its entirety and insert the following in its place:

"A. The AWARDING AUTHORITY shall be responsible for identifying and obtaining all federal, state, and local permits required by the nature and location of construction, including but not limited to railroad permits, building construction permits, and permits for street and highway cuts and openings. CONTRACTOR shall be responsible for obtaining all permits required of his equipment, work force, or particular operations (such as blasting) in the performance of the Work and not otherwise specified to be obtained by the AWARDING AUTHORITY. These permit fees shall be paid by CONTRACTOR. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of bids, or, if there are no Bids, on the Effective Date of the Agreement."

5. Contractor Records

Add a new paragraph immediately after paragraph 6.09C of the General Conditions, which is to read as follows:

STATE STATUTES AND REGULATIONS

"D. The CONTRACTOR shall comply with all applicable provisions Chapter 30, Section 39R of the Massachusetts General Laws Regarding, CONTRACTOR'S records."

6. Massachusetts Sales and Use Tax

Add the following paragraph after paragraph 6.10A of the General Conditions:

"B. The material and supplies to be used by the CONTRACTOR in the Work of this Contract are exempt from the Sales and Use Tax of the Commonwealth of Massachusetts. The AWARDDING AUTHORITY tax exemption certificate number will be furnished to the CONTRACTOR."

7. Clarifications and Interpretations

Add the following language at the end of paragraph 9.04A of the General Conditions:

"The ENGINEER'S interpretation will be made in accordance with the requirements of Massachusetts General Law Chapter 30, Section 39P."

8. Change of Contract Price

Delete paragraphs 11.01, 11.02, and 12.01 of the General Conditions, having to do with Change of Contract Price. Changes in contract price will be governed by the section called "Change Orders" in Attachment D, Section XXX and Article 11 in the Supplementary Conditions.

9. Payments

Delete paragraph 12.028.1 of the General Conditions, in its entirety and insert the following in its place:

"1. Progress Payments will be made in accordance with the Massachusetts General Law Chapter 30, Section 39G or 39K, as applicable.

Add the following new paragraph following paragraph 14.02C.1 of the General Conditions:

"2. The CONTRACTOR shall make payments to Subcontractors in accordance with the requirements of Massachusetts General Law Chapter 30, Section 39F."

Delete paragraph 14.07B of the General Conditions in its entirety and insert the following in its place:

"1. If, on the basis of the ENGINEER's observation of the Work during construction and final inspection and, upon the ENGINEER's review of the final Application for Payment and accompanying documentation, the ENGINEER is satisfied that the Work has been completed and that the

CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will indicate in writing his recommendation of payment and present the Application to the AWARDING AUTHORITY for payment. Thereupon the ENGINEER will give written notice to the AWARDING AUTHORITY and the CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, the ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment. In such case the CONTRACTOR shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, the AWARDING AUTHORITY shall in accordance with the applicable Massachusetts General Law, pay the CONTRACTOR the amount recommended by the ENGINEER."

10. Suspension of Work and Termination

Delete paragraph 15.01A of the General Conditions in its entirety and insert the following in its place:

"A. The AWARDING AUTHORITY may order, at any time and without cause, the CONTRACTOR to suspend or delay the Work in accordance with Massachusetts General Law Chapter 30, Section 39-0."

11. Labor Classifications and Minimum Wage Rates

Add the following paragraphs under the heading "Wage Rates" after paragraph 17.8 of the Supplementary Conditions: "17.11 Wage Rates

- A. Minimum wage rates as determined by the Commissioner of the Department of Labor and Industries under the provisions of Massachusetts General Laws Chapter 149, Sections 26-270 apply to this project. A copy of the wage schedule is included in the front end of the specifications under Federal Minimum Wage Rates. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the Commissioner. Such approved minimum rate shall be retro- active to the time of the initial employment of such person in such trade or occupation. The CONTRACTOR shall notify the AWARDING AUTHORITY of its intention to employ persons in trades or occupations not classified in the wage determinations as soon as possible in order to allow sufficient time for the AWARDING AUTHORITY to obtain approved rates for such trades or occupations.
- B. The schedule of wages referred to above are minimum rates only, and the AWARDING AUTHORITY will not consider any claims for additional compensation made by CONTRACTOR because of payment by the CONTRACTOR of any wage rate in excess of the applicable rate contained in the Contract.
- C. The said schedule of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedule shall be kept posted in a conspicuous place at the site of the Work.
- D. CONTRACTOR and subcontractors shall submit a copy of weekly payroll records to the AWARDING AUTHORITY and the AWARDING AUTHORITY shall retain the records of a

minimum of three years."

B. OTHER REGULATORY REQUIREMENTS:

1. Working Hours

No laborer, workman, mechanic, foreman, or inspector, working within the Commonwealth, in the employ of the CONTRACTOR, subcontractor, or other person doing or contracting to do the whole or a part of the work contemplated by this contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency.

2. DEP Community sound Level Criteria

The Community Sound Level Criteria as established by the Commonwealth of Massachusetts Department of Environmental Protection (DEP) must be conformed to prior to the AWARDING AUTHORITY's acceptance of the structure. The following sound level criteria must be met at the construction site:

- A. The increase in the broad band noise level shall not be in excess of ten (10) dB(A) above ambient at the station boundary. The ambient level is defined as the A- weighted noise level that is exceeded ninety (90) percent of the time measured during the period in question.
- B. The primary noise source(s) shall not produce a puretone condition. Puretone is any given octave band center frequency that exceeds the two adjacent center frequencies by three (3) or more decibels.

END OF SECTION

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SUPERSEDING CHANGES TO GENERAL AND SUPPLEMENTARY CONDITIONS

1. GENERAL CONDITIONS

2.06A - insert at end: Said conference shall be scheduled and arranged by the Contractor.

4.01B – delete

4.06G – delete

5.07B – delete

6.17E - restore the word "timely" in the first line. Delete the word "only" from the 5" line. Where "only" has been deleted, insert "to determine their general conformance with the contract documents, in accordance with good and accepted engineering practices, and".

8.02A - delete "to whom contractor makes no reasonable objection".

9.02A - Insert, after "Work" in the 6" line, "While construction is active at the project, said visits and inspections will take place at least once per week."

12.06 - delete subparts A and B, and replace with the following: "The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Engineer on account of any delay in the commencement of the Work and/or any delay in, or suspension of any portion of the Work, whether such delay is caused by the Owner, the Engineer, or otherwise. The Contractor acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time as provided in these general conditions.

No claims shall be allowed on account of the failure of the Engineer to furnish Drawings, specifications or instructions or to return Shop Drawings or Samples until the expiration of the applicable time period referenced in Mass. Gen. L. c. 30, §39P, and not then unless such claim be reasonable.

No extension of time shall be granted because of seasonable or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contract, whether occurring within the time originally scheduled for completion, or within any period of extension granted. There shall be no increase in the Contract Sum on account of any additional costs or operations or conditions resulting therefrom.

14.02C - change 'Ten' to 'Twenty-One'

14.07A(3) - delete the first three lines through the word "Owner,". In the third line, after Contractor, substitute "shall" for "may". In the fourth line, after the word "full" insert "on behalf of both Contractor and all of its Subcontractors,".

14.09A(1) – delete

2. SUPERSEDING CHANGES TO GENERAL AND SUPPLEMENTARY CONDITIONS

15.03B - add after "termination" ", with respect to this project or any other project of the Contractor."

Add "15.03C. If this Contract is terminated by Owner with or without cause, and regardless of whether said termination is rightful or wrongful, in no event shall the Contractor be paid a sum which, together with prior payments to Contractor, exceeds the sum payable to Contractor under the Agreement (Section 00520), as adjusted by any agreed change orders.

II. SUPPLEMENTARY CONDITIONS

Article V - Bonds and Insurance

Employer's liability coverage must be \$2 million per accident, \$2 million disease limits, and \$2 million per employee disease limits.

General liability insurance limits must be \$5 million aggregate, \$2 million dollars' products/completed operations aggregate; \$2 million personal injury and advertising; and \$2 million per occurrence.

The contractual liability insurance coverage must have limits corresponding to the foregoing. At 5.04A.6, the following changes should be made to paragraph I of the indemnity clause: four lines from the bottom, the parenthesis should be removed from the word "CAUSED" and the word "CAUSED" should be changed to lower-case (caused). Also, in the last line of said clause, insert the word "for" after the word "anyone."

At SC-5.04C 1 - insert the following sentence at the end: "The Contractor's excess liability insurance coverage must follow from with its underlying liability coverages."

SC-6.20A - insert the word "defend" after the word "shall" in the first line.

SC-14.02A.3 - insert the following sentence at the end: "Retainage for the entire project will be withheld until substantial completion of the entire project, at which time retainage shall be accounted for, subject to all of the other terms and conditions of payment at the time of substantial completion.

Add the following Article SC-18. SC-I 8 Arbitration - J

18.1 Controversies and Claims Subject to Arbitration. Any Claim arising out of or related to the Contract, or the breach thereof, except claims relating to aesthetic effect, shall be settled by arbitration, subject to the provisions of Subparagraph 18.7. Arbitration will be conducted in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association and judgment upon the award rendered by the Arbitrator or Arbitrators may be entered in any Court having jurisdiction thereof. In any such arbitration in which the amount stated in the demand is \$100,000 or less, a single arbitrator shall be appointed in accordance with the procedures set forth in the American Arbitration Association Construction Industry Arbitration Rules. In any such arbitration in which the amount stated in the demand is in excess of \$100,000, a panel of three arbitrators shall be appointed in accordance with the procedures set forth in the American Arbitration Association Construction Industry Arbitration Rules. The parties may agree to use any arbitration service. In the absence of such agreement, the American Arbitration Association shall be utilized.

18.2 Rules for Arbitration. If the neutral arbitrator is appointed by the American Arbitration Association, the said Association shall administer the arbitration and its Construction Industry Arbitration Rules shall govern all aspects of the proceeding including the enforcement of any award. If the neutral arbitrator is not appointed by the American Arbitration Association, then the panel of arbitrators shall act as the administrator of the arbitration, but the Construction Industry Arbitration Rules of the Association shall nonetheless govern all aspects of the proceeding, including the enforcement of any award. The arbitration panel shall have all the powers and duties conferred on the Association pursuant to said rules.

In addition, the following rules shall govern the selection of arbitrators and the proceedings:

18.2.1 Neither party may appoint as arbitrator an employee or an owner of that party, nor the parent, spouse or child of an employee or owner of that party.

18.2.2 After the neutral arbitrator has been appointed, neither party may engage in ex parte communication with the arbitrator appointed by that party.

18.2.3 Contract Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall otherwise continue their performances hereunder.

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18.3 When a written decision of the Engineer states that the decision is final, any demand for arbitration of the matter covered by such decision must be made within two months after substantial completion of the project, as determined by the Engineer in accordance with the provisions hereof. The failure to demand arbitration within said two month period will result in the Engineer's decision becoming final and binding upon the Owner and the Contractor.

18.4 A Demand for arbitration shall be made with the time limits specified in Subparagraph 18.3, and in no event shall be made after the date when the institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations.

18.5 Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a

claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

18.6 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and the judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

18.7 Notwithstanding any provision contained in this Paragraph 18 or elsewhere in the Contract Documents, the Owner reserves the following right in connection with claims and disputes between the Owner and Contractor:

1. the right to institute the legal action against the Contractor in any court of competent jurisdiction in-lieu of demanding arbitration pursuant to this paragraph 18, in which case the dispute or disputes which are the subject of such action shall be decided by such court, and not by arbitration.

2. the right to obtain from any court of competent jurisdiction a stay of any arbitration instituted by the Contractor, provided that the application for such stay is made before the appointment of the neutral arbitrator in such arbitration, in which case the dispute or disputes which are the subject of such arbitration shall be decided by such court, and not by arbitration;

3. the right to require the Contractor to join as a party in any arbitration between the Owner and Architect relating to the Project in which case the Contractor agrees to be bound by that decision of the arbitrator arbitrators in such arbitration.

In case the Owner elects to proceed in accordance with 18.7.1 or 18.7.2 above, the word "litigation", shall be deemed to replace the word "arbitration" wherever the latter word appears in the Contract Documents.

SC-19 MBE and WBE participation

The Contractor shall comply with the provision of G.L.c. 7 40N, and any associated regulations effective during the time of the project, relative to the participation of minority and women- owned businesses in connection with the project. At present, the current participation goals are 7.4% MBE and 4% WBE.

END OF SECTION

EQUAL OPPORTUNITY REQUIREMENTS

1. EQUAL EMPLOYMENT OPPORTUNITY

- A. Equal Employment Plan: The Contractor and each Subcontractor shall implement an effective affirmative action plan to assure equal employment opportunity throughout the performance of work on this project. Do not discriminate against any employee or applicant for employment because of race, color, sex, religion, age, or national origin. Affirmative action plan shall include, but not be limited to, the following:
1. Employment, upgrading, demotion, or transfer.
 2. Recruitment or recruitment advertising.
 3. Layoff or termination.
 4. Rates of pay or other forms of compensation.
 5. Selection for training, including apprenticeship.
- B. Rules and Regulations: The Contractor and each Subcontractor shall comply with all applicable local, state and federal laws and regulations regarding equal employment opportunity and with the provisions of the following:
1. Governors "Executive Order No. 74", dated July 20, 1970, entitled the "Governor's Code of Fair Practices", as amended by the Governor's Executive Order No. 116, dated May 1, 1975.
 2. The Fair Employment Practices Law of the Commonwealth, Chapter 1518 of the General Laws of Massachusetts, as amended.
 3. The rules and regulations of the Massachusetts Commission Against Discrimination as in force at the date of the Contract.
 4. The rules, regulations and relevant orders of the United States Secretary of Labor, the Commonwealth of Massachusetts Department of Labor and Industries, and other authorities having jurisdiction as in force at the date of the Contract.
 5. Governor's 'Executive Order No. 237'.
 - a. Employment Advertisements: State in all solicitations or advertisements for employees that all qualified applicants will receive consideration for employment without regard to race, color, sex, religion, age, or national origin.
 - b. Referral Notices: Direct special effort toward the recruitment of minority workers through the unions and through referral agencies representing the minority community.
 - c. Advising Labor Unions: Send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the Contractor's equal employment opportunity commitment and post copies of these notices in conspicuous places available to employees and applicants for employment.

- d. Posting: Post copies of equal opportunity employment notices in conspicuous places available to employees and applicants for employment and post notices setting forth the provisions of this non-discrimination equal employment opportunity clause.
- e. Manning Table: Assume and be responsible for the affirmative duty of achieving the range of minority employment and women work force participation set forth in a manning table for the entire project. Submit a manning table at the request of the Owner and obtain Owners approval prior to the Award of Contract.
- f. Percentage Participation: Both Contractor and Sub-contractor shall comply with requirements of Minority and Women Business percentage of Contract percentage participation requirements specified in the Minority and Women Business Enterprise Set Aside Requirements Section.

END OF SECTION

MINORITY AND WOMEN BUSINESS ENTERPRISE SET ASIDE REQUIREMENTS

1. GENERAL

- A. All provisions of the Contract Documents shall be subject to all applicable provisions of law, including, without limitation, Federal, State, and Local statutes and ordinances regarding setting aside a portion of the Contract for qualified Minority and Women Business Enterprises. The Contractor shall recognize that other duties and obligations are required by laws, statutes, and ordinances which may not be provided herein, but must be considered and made a part of this Contract. In case of a conflict between the Contract Documents and applicable laws, statutes, and ordinances, the provisions of law, statutes, and ordinances shall *govern*.

2. MINORITY AND WOMEN OWNED BUSINESS ENTERPRISE SET ASIDE REQUIREMENTS

- A. Requirements For minority and women business enterprise set aside requirements, provided to the Architect by the Awarding Authority Follow. The Architect does not warrant or guarantee the completeness or accuracy of this information, and every bidder and contractor shall be responsible for ascertaining the MWBE set aside requirements in the area where the work will be performed.
 - 1. Bidders shall agree to contract with minority and women owned businesses as certified by the State Office of Minority and Women Business Assistance [SOMWBA]. "The amount of participation which shall be reserved for such enterprises shall not be less than fifteen percent [15%] of the total contract amount, of which at least ten percent [10%] shall be reserved for minority business enterprises and five percent [5%] shall be reserved for women-owned business enterprises.
 - 2. The Contractor and each Subcontractor shall furnish to the Awarding Authority, within fifteen days after completion of its portion of the work, a certified 'Statement of Compliance' certifying compliance with minority and women business enterprise set aside requirements. Submit the 'Statement of Compliance' in a form acceptable to the Awarding Authority.
 - 3. See Massachusetts Executive Order 237 as amended.

END OF SECTION

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BY-LAWS OF THE TOWN OF ARLINGTON

TITLE 1

ARTICLE 16: CONSTRUCTION PROJECTS

ART. 15, A.T. M. 4/22/96

Section 1. Women Work Force Participation

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

ART. 17, A.T.M. 4/28/99

A. The contractor shall maintain as a goal on this project a not less than five percent ratio of women work force to total project hours in both the general contract and individual filed sub-bid contract, if applicable. The preceding sentence shall be included in all construction contracts whether entered into the Town pursuant to the provisions of M.G.L. c.149 or

M.G.L. c.30 §.39M, et seq., provided however, that if entered into under Chapter 30 same shall not be deemed to apply where the projected bid price as determined by the Director of Public Works is not likely to exceed \$200,000.

B. A Labor Scheduling Table which will be used as a tool for achieving a range of women work force participation for the entire project in both the general contract and each individual filed sub-bid contract.

Section 2. Equal Opportunity Goal Compliance

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

ART. 16 A.T.M. 4/24/96; ART. 17, A.T.M. 4/28/99

A. Before starting work, the contractors (includes general contractor, for itself and its subcontractors, as well as all filed sub-bid contractors, if applicable) will submit plans for achievement of the equal opportunity goals of the contract. All contractors will be required to make a good faith effort to achieve these goals. The plan will indicate if the contractors expect to achieve the requirements during the first quarter. If there are reasons why the contractors do not expect to achieve the requirements during the first quarter year of the contract construction phase, then the contractors shall provide a plan calculated to address, to the extent reasonably possible, these obstacles to a good faith effort to achieve such goals.

B. Not more than ten days following the end of each work quarter, the contractors will report on the achievement of the goals, detailing the good faith efforts that have been made and will continue to be made and any other appropriate efforts not yet undertaken.

C. All reports will be signed by an officer or principal of the company who has the authority to contractually obligate the company.

Section 3. Recruitment and Training

ART. 53 ATM 5/19/97

Any board, officer, committee, or other agency of the Town, which acts on behalf of the Town in making or supervising any contract, in an amount exceeding the sum of \$100,000 for the purchase of goods or services or for the construction, renovation, or repair of buildings or other improvement of real estate, may make arrangements with contractors and other interested agencies for special programs of recruitment and training in connection with the work to be performed on such

contract, with the objective of promoting equal employment opportunity for members of minority groups protected by the fair employment laws of the Commonwealth and the United States. Any board, officer, committee, or other Town agency may expend Town funds in carrying them out provided that appropriations specifically designed for such purposes have been voted by the Town Meeting.
ART. 32, ATM 5/14/03

Section 4. LEED

It is the intent of the Town to reduce the life-cycle operating costs and increase the environmental efficiency of Town buildings, by adopting the goal that all construction of new Town buildings and major renovations and additions to existing Town buildings meet or exceed a Silver Certification based on the most current criteria of the Leadership in Energy and Environmental Design (LEED) Green Building Rating System promulgated by the United States Green Building Council, or comparable scoring system. The Town shall include a minimum of LEED Silver Certification, or equivalent level in comparable building scoring system, as a required element in requests for proposal or bids it issues soliciting architectural design services for construction, major renovation, and addition to its buildings, unless the Permanent Town Building Committee makes the finding that such certification is not in keeping with the use or purpose of the building or is otherwise inappropriate. No building project shall be deemed complete until LEED Silver Certification or greater, or equivalent, has been confirmed, unless the PTBC makes the finding that such certification is not in keeping with the use or purpose of the building or is otherwise inappropriate.

ART. 18, ATM 4/00, ART. 32 ATM 5/14/03

http://www.town.arlington.ma.us/Public_Documents/ArlingtonMA_TownBylaws/title1#article16

END OF SECTION

INSURANCE REQUIREMENTS

1. GENERAL

- A. This section specifies the Owner's requirements for insurance and relates to the General Conditions of the Contract for Construction and Supplementary Conditions of the Contract for Construction.
- B. Provisions of the General Conditions of the Contract for Construction and Supplementary General Conditions of the Contract for Construction, which are not modified by the following insurance Requirements, remain in full effect.

2. INSURANCE REQUIREMENTS

- A. Insurance Limits: The insurance required should be written for not less than the limits of liability required by law or the following limits, whichever is greater: State and federal Workmen's Compensation Statutory Benefits required by union contract as required.

GENERAL LIABILITY*

Bodily Injury and Property Damage Each Occurrence	\$1,000,000.00
Bodily Injury and Property Damage Aggregate General	\$2,000,000.00

Liability shall include coverage for the following:

- Comprehensive form
- Premise/Operations
- Liability
- Explosion, Collapse and Underground (XCU).
- Products/Completed Operations (aggregate limit \$2,000,000.00)
- Contractual Liability Independent
- Contractors Broad
- Form Property Damage
- Personal Injury Including Libel and Slander
- Coverage Broad Form CGL Endorsement

AUTOMOBILE LIABILITY**

Comp. Automobile Liability**
Bodily Injury and Property Damage Per Accident

**Provide coverage for All Owned, Non-Owned, and Hired vehicles.

EXCESS LIABILITY Umbrella Form Each occurrence Aggregate

- B. Exclusions: The Owner's property insurance shall not cover tools, equipment, shoring, staging, forms, temporary buildings or other equipment owned or rented by the Contractor, its Subcontractors, or any Worker.
- C. Named Insured: Each Insurance policy certificate of insurance provided by the Contractor shall name the Town of Arlington as an additional insured. Each insurance policy and certificate of insurance provided by the Contractor shall contain a provision that the Owner shall be notified of cancellation or restrictive amendment at least thirty (30) days prior to the effective date of such cancellation or amendment.
- D. Insurance Certificates: Submit insurance certificates for the Owner's review and approval prior to commencement of the work. The Contractor and all subcontractors who are required to provide insurance under the Contract shall provide accurate and bona fide "Certificates of insurance "issued by a responsible agent of the insurance company.
 - 1. Certificate Content: Such "Certificates of Insurance" shall clearly indicate the insurance coverage. Each "Certificate of Insurance" shall be accompanied by a sworn and duly notarized statement from the responsible agent of the insurance company issuing the certificate clearly stating that all insurance specified and required by the Contract Documents is provided and in force, and also a clear statement of all exceptions and deviations, if any, from the Contract Document issuance requirements.
 - 2. Responsibility: The insurance agent issuing and authorizing the "Certificate of Insurance" shall be responsible and liable for the accuracy and validity of the "Certificate of Insurance". Each insured party shall certify by sworn and duly notarized statement that the "Certificate of Insurance" issued for them are bona fide.
 - 3. Disclaimers Prohibited: "Certificates of Insurance" shall not contain any disclaimers such as: "This Certificate is issued as a matter of information only and confers no right upon the certificate holder. This Certificate does not amend, extend, or alter the coverage afforded by the policies listed below." Disclaimers are not acceptable.
 - 4. Certificates of Insurance Can Be Relied Upon: Parties receiving "Certificates of insurance" shall be entitled to rely upon the "Certificates of insurance" and shall have the right to claim the benefits and protection provided by the insurance as it applies to them.
 - 5. Alternate to "Certificates of Insurance": Instead of providing the "Certificates of Insurance" and the sworn statements required above, the insured may provide bona fide and accurate copies of all insurance policies and riders accompanied by a sworn and duly notarized statement from the insured that the policies, riders, and documents submitted are bona fide and valid, and that parties receiving the insurance documents may rely on the documents as satisfaction of the Contract insurance requirements.
- E. The Contractor shall provide "builder's risk" insurance as described in the General Conditions of the Contract for Construction and with limits equal to the full insurable completed value of the building under construction. The "Builder's Risk" insurance shall include "all risk" insurance for physical loss and damage including theft,

INSURANCE REQUIREMENTS

vandalism, and malicious mischief. The "Builder's Risk" insurance shall be amended to delete any and all endorsements relating to cancellation of the policy due to partial occupancy by the Owner.

1. Builder's Risk Deductible Amount:	\$1,000,000.00
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END OF SECTION

SECTION 01 11 00: SUMMARY OF WORK

PART 1 – GENERAL

1.01 LOCATION

- A. Stratton School is located at 180 Mountain Ave, Arlington, MA 02474. Bishop School is located at 25 Columbia Road, Arlington, MA 02474. Peirce School is located at 85 Park Avenue Extension, Arlington, MA 02474.

1.02 GENERAL REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and applicable parts of Division 01 General Requirements are all included as part of this Section. The Contractor is required to examine all other sections of the specifications for requirements that may affect the work of this Section. The Contractor is also required to coordinate the Work with that of all trades affecting or affected by the Work of this Section, and to cooperate with such trades to assure the continued progress of the Work.
- B. The intent of the Contract Documents is to require that the Contractor provide all material, labor and equipment needed in order to furnish a complete Project, and that all of the material, labor and equipment be furnished complete in every respect.

1.03 SCOPE OF WORK

- A. Work covered by this contract includes but may not be limited to site-work; construction; re-construction; alterations; remodeling or repair of the public works Project described in this paragraph 1.03 including the following major work:
 - 1. Replacing play equipment
 - 2. Replacing safety surfacing
 - 3. Replacing site furnishings
 - 4. Paver, asphalt and concrete surfacing
 - 5. Painted graphics
 - 6. Resurfacing existing bituminous concrete with a sealcoat and painted graphics at Peirce and Bishop schools
 - 7. Basketball goal installation at Peirce and Bishop schools
 - 8. Alternates: Bid Deducts
 - 9. Substantial Completion date is October 1, 2022.
 - 10. Final Completion date is November 1, 2022.

1.04 DOCUMENTATION

- A. Contractor shall cooperate with the Owner and Landscape Architect to record any and all changes to existing conditions or proposed work that deviate from the Contract Documents. The Contractor shall furnish all recorded changes to the Landscape Architect to be used for As-Built documents.

1.05 NOISE CONTROL

- A. The Contractor shall adhere to the Town ordinances for Noise Control (Title V, Article 12, Section 3) throughout the construction period. Noise control will be strictly enforced by the Town.
- B. No construction shall occur between 7 PM and 7 AM Monday through Friday.
- C. No heavy machine shall be used between 6 PM to 8 AM Monday through Friday, 5 PM to 9 AM on Saturday, Sunday, or legal holidays.
- D. Any exemption to prohibited construction hours must be authorized by a Town representative.
- C. Contractor shall not permit engine idling on the job site. This shall be enforced through random, unannounced periodic inspections.

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 22 00: UNIT PRICES

PART 1 – GENERAL

- 1.01 The Unit Prices set forth herein shall be used to determine any equitable adjustment of the Contract Price in connection with the changes or extra work performed under this Contract as directed by the Town.
- 1.02 It is mutually understood and agreed that such Unit Prices include all items of costs, equipment, taxes and insurance of every kind, overhead, and profit for the Contractor and they shall be used uniformly, without modification for addition and deductions. Prices listed under ADDITIONS and DEDUCTIONS are to be the complete total price billed to and paid by the Owner therefor. There can be no more than fifteen (15) percent difference in price between the additions and deductions.
- 1.03 Sufficient prior notice shall be given in accordance with the General Conditions so that proper measurements of materials removed or to be replaced may be taken. All quantities used in the determination of additions to or deductions from the Contract Price due to Unit Prices shall only be those that have been determined and approved by the Owner in advance.
- A. The unit price bid shall be taken to include all labor and materials necessary to make the item of work complete in place, whether listed or not. All supervision, overhead items, including but not limited to bond, insurance, and labor burden – and profit shall be included. Payment shall fully compensate the Contractor for any other work which is not specified or shown, but which is necessary to complete the work of the item.
- 1.04 UNIT PRICES FORM

ITEM DESCRIPTION (All references to items shall correspond to work as described in the relevant portions of the Construction Documents.)		UNIT	COST	APPROVED
1	Construction fencing	LF	\$	
8	Ordinary borrow/clean fill, complete in place	CY	\$	
3	Gravel borrow, complete in place	CY	\$	
4	Base drainage stone for poured in place rubber, in place	CY	\$	
5	Dense graded gravel, complete in place	CY	\$	
6	3/4" Crushed stone/drainage stone, complete in place	CY	\$	
7	Clean screened loam, complete in place	CY	\$	
8	Asphalt walk paving, per detail and specification	SF	\$	
9	Vehicular asphalt paving			
10	4" reinforced concrete paving, complete in place including base and subbase preparation & broom finish	SF	\$	
11	Poured-in-place rubber surfacing installed per detail and specification	SF	\$	
12	Lawn seed & loam, per detail and specification	SF	\$	

1.05 GENERAL

- A. Sufficient prior notice shall be given in accordance with the General Conditions so that proper measurements of materials removed or to be replaced may be taken. All quantities used in the determination of additions to or deductions from the Contract Price due to Unit Prices shall only be those that have been determined and approved by the Town in advance.
- B. The unit price bid shall be taken to include all labor and materials necessary to make the item of work complete in place.

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01 23 00: ALTERNATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including the conditions and general requirements of the Contract, Division 00 and applicable parts of Division 01, apply to the work under this Section.
- B. The Contractor shall carefully examine all the Contract Documents for requirements that affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.2 SUMMARY

- A. The Schedule of Alternates included in this Section lists all the Alternates that appear in the Contract Documents, and the specification Sections which are affected by each Alternate.
- B. For each of the Alternates scheduled at the end of this Section, bidders shall state the amount in the proposal to be added to or deducted from the Contract Sum for the work.
- C. Consult the individual Specification Sections and the Drawings for detailed requirements of each Alternate.

1.3 GENERAL INSTRUCTIONS

- A. Each Bidder shall be held fully responsible for examining the scope of the Alternates generally defined herein and for recognizing any modifications to his work caused by any Alternate.
- B. The Bid Alternate Price shall be complete cost, including overhead, profit, bonds, insurance, transportation, and all other costs connected with, or incidental to, the work described.
- C. Alternates listed below in the Schedule of Alternates are listed in order. The Contract will be awarded on the basis of the Base Bid only, or the Base Bid plus any number of Alternates strictly added in order.
- D. All dimensional and quantity estimates provided in the descriptions of the work below (noted with "approx.") are provided for initial reference only; exact dimensions and quantities for the full extent of the work as described in the Drawings and Specifications shall be confirmed in field by the Contractor before submitting the price. The Contractor shall be responsible for the full extent of the work described, not to be limited by the

approximate quantities.

1.4 ALTERNATES

- A. Definition: "Alternates" are alternate products, materials, equipment, systems, methods, units of work, or major elements of the construction, which may, at the Authority's option and under the terms established by the Contract or Agreement, be selected for the work in lieu of the corresponding requirements of the Contract Documents or in addition to the work of the Base Bid as noted.
- B. Alternate Requirements: A Schedule of Alternates is included at the end of this Section. Each Alternate is defined using abbreviated language, recognizing that the Contract Documents define the requirements. Coordinate related work to ensure that work affected by each Alternate is complete and properly interfaced with work of each selected Alternate.
- C. Provide written proposals for each Alternate on the Bid Form for the Authority's consideration. Each proposal amount shall include the entire cost of the Alternate portion of the work, including overhead, profit, and other costs including cost of interfacing and coordinating the Alternate with related and adjacent work.

1.5 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 – DEDUCT from the Base Bid at Peirce School the specific asphalt walk indicated as the DEDUCT ALTERNATE on the PEIRCE – MATERIALS PLAN with reference to related details and associated specifications.
- B. Alternate No. 2 – Deduct from the Base Bid at Bishop School the continuous poured in place surfacing at the swings only and include Engineered Wood Fiber and associated wear mats. This material change is indicated as the DEDUCT ALTERNATE on the BISHOP – MATERIALS PLAN with reference to related details and associated specifications.
- C. Alternate No. 3 – Deduct from the Base Bid at Stratton School the continuous poured in place surfacing at the swings only and include Engineered Wood Fiber and associated wear mats. This material change is indicated as the DEDUCT ALTERNATE on the BISHOP – MATERIALS PLAN with reference to related details and associated specifications.

PART 2 – GENERAL

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

ALTERNATES
SECTION 01 23 00

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. The Conditions of the Contract and other Sections of Division I, General Requirements apply to this Section.

1.02 PROJECT MANAGEMENT

- A. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- B. Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 7:00 a.m. and 5:00 p.m. on Monday through Saturday. No work is to be done on holidays or Sundays.
- C. The Contractor is responsible for the security of partially completed work until the project is accepted by the Owner.

1.03 PROJECT MEETINGS

- A. Pre-construction conference: Within 5 days following a Notice to Proceed, the Contractor shall schedule a pre-construction conference to be held at the project location. This conference will be attended by the project superintendent as a minimum. The contractor shall bring to this conference the following documents more fully described elsewhere in this specification:
 - 1. Project Progress Schedule
 - 2. Schedule of Values
 - 3. Submittal Register
 - 4. Notification of Product Substitution
 - 5. Initial submittals covering first 30 days of construction
 - 6. Site phone number and after hours point of contact and phone number.
- B. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Landscape Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. The Contract Documents.
 - b. Related requests for interpretations (RFIs).
 - c. Related Change Orders.
 - d. Deliveries.
 - e. Submittals.
 - f. Review of mockups.

- g. Possible conflicts.
 - h. Compatibility problems.
 - i. Time schedules.
 - j. Weather limitations.
 - k. Manufacturer's written recommendations.
 - l. Warranty requirements.
 - m. Compatibility of materials.
 - n. Acceptability of substrates.
 - o. Temporary facilities and controls.
 - p. Space and access limitations.
 - q. Regulations of authorities having jurisdiction.
 - r. Testing and inspecting requirements.
 - s. Installation procedures.
 - t. Coordination with other work.
 - u. Required performance results.
 - v. Protection of adjacent work.
 - w. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
- 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- C. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
 - 1. Attendees: In addition to representatives of Owner, and Landscape Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.

- 2) Sequence of operations.
- 3) Status of submittals.
- 4) Deliveries.
- 5) Off-site fabrication.
- 6) Access.
- 7) Site utilization.
- 8) Temporary facilities and controls.
- 9) Work hours.
- 10) Hazards and risks.
- 11) Progress cleaning.
- 12) Quality and work standards.
- 13) Status of correction of deficient items.
- 14) Field observations.
- 15) Requests for interpretations (RFIs).
- 16) Status of proposal requests.
- 17) Pending changes.
- 18) Status of Change Orders.
- 19) Pending claims and disputes.
- 20) Documentation of information for payment requests.

3. Minutes: Landscape Architect will record and distribute the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Contractor's Construction Schedule shall be updated at each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.04 COORDINATION

- A. Project Schedule. The Contractor shall submit at the pre-construction conference for approval to the Owner a detailed operational schedule showing the sequence of operations prior to commencement of any work at the site. This project schedule will be in the form of a CPM, PERT or Gant chart which clearly reflects project tasks to be completed in a logical sequence. Any changes to this operational plan must be approved by the Owner. The Contractor shall keep this schedule updated to reflect actual progress, and will revise the schedule if required to do so based on substantial departures from the planned progress of the work.
- B. Project Superintendent. The Contractor must retain a competent full time representative, satisfactory to the Owner. This representative shall not be changed, except with the consent of the Owner. The representative shall be in full charge of the work.

END OF SECTION

SECTION 01 31 46: PERMITS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions and general requirements of the Contract, Division 01 and applicable parts of Division 31, EXCAVATION FILLING AND GRADING, apply to the work under this Section.
- B. The Contractor shall perform the work in accordance with the Contract Documents, and any applicable municipal requirements.

1.2 SCOPE OF WORK

- A. The Contractor shall be responsible for obtaining all permits required to complete the work of this contract, to provide all coordination and furnish all bonds, assurances and required warranties. As applicable, the Contractor shall be responsible for any/all fees associated with the securing of permits necessary for the execution of the work of this contract. Should any street work be required, a contractor specifically approved by the Town shall perform it.

1.03 PERMITS BY CONTRACTOR

- A. The Contractor shall prepare permit applications and obtain applicable permits after the contract is awarded, bearing all expenses. All required permits shall be obtained, INCLUDING BUT NOT LIMITED TO the following:
 - 1. Parking Permits as needed and appropriate

1.4 GENERAL

- A. Guarantee all work per permit requirements.

1.5 DIG SAFE

- A. Contact DIG SAFE seventy-two (72) hours prior to initiating work at #811.

PART 2 – MATERIALS

2.1 GENERAL

- A. All materials and equipment shall conform to permit requirements and the Town's standards for utilities, excavation, backfill, patching, and surveying or other work unless otherwise stated in these specifications. Coordinate as necessary with the appropriate Town official and/or private utility.

PART 3 – EXECUTION

3.1 GENERAL

- A. Execute all work per permit requirements. All plumbing and electric work to be approved by Town Inspectors; sidewalk ramps to be approved by Town Engineer.

SECTION 01 33 00: SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work to be performed under this Section shall include the compilation and submittal of all required shop drawings, manufacturer's cuts, specifications, and certifications of all materials and equipment for the Landscape Architect's approval. Actual product samples may also be required as stipulated in the technical specification sections.
- B. All submittals shall be submitted within four (4) weeks after the award of the contract and may be made and distributed digitally with the approval of the Owner via email or File Transfer Protocol (FTP) site. Alternatively, submittals may be made in hard copy form; three (3) copies (Contractor, Landscape Architect, and Other City Department) shall be in three (3) submittal packages so that manuals can be prepared for office and field reference.

1.3 GENERAL SUBMITTAL PROCEDURES

- A. The Landscape Architect has 10 days to review the submittals and return them to the Contractor, also in PDF format.
- B. Transmittal: Include a transmittal with each submittal identifying the item clearly. All transmittals shall coordinate with these Specifications.

PART 2 – PRODUCTS

2.1 REQUIREMENTS

- A. References are made throughout the Specifications and Drawings where submittals are required. All finishes, colors, and patterns are to be reviewed and approved by submittal or field sample.
- B. Where the Contractor's intention is to furnish the materials or equipment as specified, a list of all such elements, by Specification section, shall accompany the submittals so that the entire submittal is complete for the project.

PART 3 – EXECUTION

3.1 SUBMISSIONS

- A. Submit all documents and data either in a collated, manual format, with three (3) manuals to be submitted; OR distributed digitally with the approval of the Owner. Include a Table of Contents of the material for reference. The submittal is to be entire and complete, addressing all furnishings and installation.
- B. Submit all required product or material samples concurrent with the materials/equipment information manuals described above. Each submittal shall reference its appropriate specification section, part, and paragraph.

END OF SECTION

SECTION 01 35 00: SPECIAL PROJECT PROCEDURES

PART 1 – GENERAL

1.1 SAFETY REGULATIONS

- A. This Project is subject to compliance with Public Law 91-596 the "Occupational Safety and Health Act of 1970" (OSHA), as amended, with respect to all rules and regulations pertaining to construction, as amended, and as published by the U.S. Department of Labor.
- B. The committing of nuisances on the Site or adjacent property is prohibited.

1.2 SAFETY PRECAUTIONS

- A. The Contractor shall take all precautions to safeguard the health and well-being of all workers and all others rightfully on the Project site who may be affected by work done under this Contract. The Contractor is solely responsible for safety on the Site of the Project, both during construction hours and non-construction hours.
- B. All safety laws and regulations of the U.S. Department of Labor, the Commonwealth of Massachusetts, and the Town of Arlington applicable to work performed under this Contract shall be adhered to by the Contractor.

1.3 LEGAL RELATIONS/RESPONSIBILITY TO PUBLIC

- A. Laws to be Observed:
 - 1. The Contractor shall keep himself fully informed of all existing and future State and National Laws and Municipal ordinances and regulations in any manner affecting those engaged or employed in the Work, or the materials used or employed in the Work, or in any way affecting the conduct of the Work, and all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same and of all provisions required by Law to be made a part of this Contract, all of which provisions are hereby incorporated by reference and made a part hereof. The Contractor shall cause all Subcontractors, Suppliers, agents, and employees to observe and comply with, all such existing and future Laws, ordinances, regulations, and orders.
 - 2. If the Contractor uses or stores toxic or hazardous substances s/he is subject to certain additional laws and regulations including but not limited to M.G.L. Chapter 111F, Section 2, (the "Right to Know" law) and regulations promulgated by the State Department of Public Health, the Department of Public Safety and those of Town of Boston agencies.

1.4 FIRE PROTECTION & PREVENTION

- A. The Contractor shall keep the Project Site free of rubbish and debris at all times.
 - 1. The Contractor shall provide metal barrels located at appropriate areas into which all refuse and garbage shall be deposited. All barrels shall have tight fitting covers.
 - 2. At the end of each work week, the Contractor shall thoroughly clean the Project Site of all rubbish and debris of any nature and remove such from the premises.
 - 3. In addition, to the requirements in this Section, the Contractor shall, until Final Completion of the Work, provide and maintain fire extinguishers ready for use distributed around the Project Site and in and about temporary structures, if any.
 - 4. Gasoline and other flammable liquids shall be stored in and dispensed from UL listed safety containers in conformance with the National Board of Fire Underwriters recommendations and the Commonwealth of Massachusetts Department of Public Safety requirements, and in no event within the confines of the permanent structures.
 - 5. All tarpaulins used shall have UL approval and comply with Federal Specifications CCC-C746. Polyethylene shall not be used.

1.5 RUBBISH REMOVAL

- A. The Contractor shall remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of the Work; but this shall in no way be construed to relieve the Contractor of his/her primary responsibility for maintaining the Project Site clean and free of debris, leaving all work in a clean condition satisfactory to the Official.
- B. Immediately after unpacking, the Contractor shall collect and remove from the Project Site all packing materials, case lumber, excelsior, wrapping, and other rubbish.

1.6 SITE DRAINAGE & PUMPING

- A. The Contractor shall be responsible at all times for proper and sufficient site drainage and shall maintain such drainage during the life of the Contract in a manner acceptable to the Designer and so as not to adversely affect the adjacent areas.
- B. The Contractor shall provide and maintain all pumps, suction and discharge lines, and power in sufficient number and capacity to keep all excavations, pits, trenches, foundations, and the entire property area free from accumulation of water from any source whatsoever at all times and under all circumstances and contingencies that may arise.
- C. For additional requirements of excavation and dewatering, refer to the Division 02 Section, SITE CLEARING AND PREP and Division 31 Section EXCAVATION FILLING AND GRADING.

1.7 SNOW & ICE REMOVAL

- A. The Contractor shall promptly remove all snow and ice which may impede the Work, damage the finishes or materials, be detrimental to any crafts or trades, or impede trucking, delivery or moving of materials at the Site, or prevent adequate drainage of the Site or adjoining areas.

1.8 WINTER CONSTRUCTION

- A. The Contractor shall provide protection against damage to materials and work installed in freezing weather, including special heat and coverings to prevent damage by the elements. The ground surface, under footings, under pipelines, under masonry, under concrete, and other work subject or damage shall be protected against freezing or ice formations.

1.9 TURF AREAS & SITE MAINTENANCE

- A. From Notice of Proceed through Final Completion, the Contractor shall be responsible for the following tasks:
 - 1. Removal of all graffiti within 36 hours
 - 2. Timely care and maintenance of existing turf areas including mowing. Turf areas will not be allowed to grow taller than 4 inches.
 - 3. Fall clean-up including leaf and branch removal
 - 4. Spring clean-up including leaf and branch removal

1.10 BROKEN GLASS

- A. The Contractor shall be held responsible at all times prior to Substantial Completion of the Work, or occupancy by the Town, whichever occurs first, for all broken or scratched glass, or glass which had been damaged as a result of the Work, or otherwise and, when so directed by the Official, the Contractor shall replace at no increase in Contract Price or Contract Time, all such glass broken, missing, or damaged prior to Substantial Completion.

1.11 CLEANING

- A. The Contractor shall at all times keep the site free from accumulation of waste materials or rubbish.

- B. Immediately prior to final inspection, the entire Project Site shall be thoroughly cleaned by the Contractor including, without limitation:
 - 1. All construction facilities, tools, equipment, surplus materials, debris, and rubbish shall be removed from the Project site and the entire Work shall be left broom clean.
 - 2. All finished surfaces shall be left in perfect condition, free of stains, spots, marks, dirt, and other defects. The Contractor shall be responsible for the cleaning and polishing of the Work of all trades, whether or not cleaning by such trades is included in their respective Sections of the Specifications.
 - 3. All metals, hardware, fixtures, and equipment shall be left in undamaged, bright, polished condition. In cleaning items that have a manufacturer's finish, or items previously finished by a Subcontractor, care shall be taken so as not to damage such finish.
- C. In cleaning finish surfaces, care shall be taken not to use cleaning agents that may stain any finish materials. Any damage to finishes caused by operations shall be corrected and repaired by the Contractor at no increase in Contract Price.

1.11 OPERATIONS IN OCCUPIED STRUCTURES

- A. The Contractor shall segregate all the Work from the public and/or the user group work force. The Contractor shall submit the method of segregation to the Town for approval before the start of any work.
- B. The Contractor shall ensure that its agents and employees, including agents and employees of all Subcontractors, do not have any direct and unmonitored contact with children at any time on the Site.
- C. In the event that the Contractor believes a portion of the Work cannot be completed without the possibility of direct and unmonitored contact with a child, the Contractor shall notify the Town and obtain prior written consent before proceeding with that portion of the Work. Workers who may have direct and unmonitored contact with children will be subject to verification of their Criminal Offender Record Information (CORI).

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

**SECTION 01 55 00
ACCESS**

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Provide and maintain vehicular access to site and within site:
 - 1. To temporary construction facilities, storage, and work areas.
 - 2. For use by persons and equipment involved in construction of Project.
 - 3. For use by emergency vehicles.
 - 4. Access to the work area will be through the school site. Coordination with summer program schedules is required.
- B. Remove temporary access facilities when no longer needed, and restore areas.

1.02 RELATED REQUIREMENTS

- A. Section 01 31 00, PROJECT MANAGEMENT.
- B. Section 01 57 00, TEMPORARY CONTROLS.
- C. Section 01 74 00, CLEANING UP.

1.03 EXISTING PAVEMENTS

- A. Designated existing on-site driveways may be used for construction traffic.
 - 1. Provide temporary additional roads as needed for required construction access.
 - 2. Maintain existing construction, and restore to original, or specified, condition at completion of Work.
- B. Designated areas of existing parking facilities may be used for parking of construction personnel's private vehicles and of Contractor's lightweight vehicles.
 - 1. Do not allow heavy vehicles or construction equipment in parking areas.
- C. The Contractor must coordinate with The Town of Arlington for any work which may affect the traffic on Town streets.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 CARE AND PROTECTION OF PROPERTY:

The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect

damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be promptly restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, to the satisfaction of the Owner.

3.02 REMOVAL

- A. Completely remove temporary materials and construction when construction needs can be met by use of permanent installation.
 - 1. Remove and dispose of compacted materials to depths required by conditions to be met in completed Work.
- B. Restore areas to original or to specified conditions at completion of Work.

END OF SECTION

SECTION 01 56 00: TEMPORARY BARRIERS & ENCLOSURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 GENERAL REQUIREMENTS

- A. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City, per MGL c. 30 s. 39M, Part b, Criteria 1.

1.03 WORK INCLUDED

- A. Provide all labor, equipment, implements, and materials required to furnish, install, construct, and perform all site improvements complete as shown on the Contract Drawings and specified herein; to include, but not be limited to the following:
 - 1. Temporary Construction Perimeter Fencing
 - 2. Tree or Plant Protection Fencing as indicated on the Contract Drawings
 - 3. All other temporary barriers and controls needed for protection of the public during construction.

1.04 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 - 1. Division 01 Section: TEMPORARY CONTROLS
 - 2. Division 31 Section: SITE CLEARING AND PREP
 - 3. Division 31 Section: EXCAVATION FILLING AND GRADING
 - 4. Division 32 Section: PLANTING
 - 5. Division 32 Section: LOAM AND PLANTING PREPARATION
 - 6. Division 32 Section: TURF & GRASSES

1.05 SUBMITTALS

- A. Shop Drawings and Samples
 - 1. Provide complete Shop Drawings and/or samples and catalog cuts for all items called for on the Drawings and as specified and in accordance with applicable requirements under Division 01.

1.06 PRODUCT DELIVERY, STORAGE & HANDLING

- A. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.

- B. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- C. Handle in accordance with manufacturer's instructions.
- D. The Contractor shall be solely responsible for all materials stored on the site once delivered. Any materials left unsecured at the job site shall be solely at the contractor's own risk.

1.07 DEFINITIONS

- A. The following items are included herein and shall mean:

- 1. NCLMA – National Chain Link Manufacturers' Association
- 2. OSHA – Occupational Safety and Health Act.

201 BARRIERS & BARRICADES

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.
 - 1. Comply with standards and code requirements for erection of structurally adequate barriers.
 - 2. Install barriers of a neat and uniform appearance.
 - 3. Provide graphics and signs warning of the hazard being protected against.
 - 4. Where appropriate and needed provide lighting, including flashing red or amber lights.
 - 5. Provide barriers at public rights-of-way and for public access to existing buildings when adjacent to construction operations.
- B. Provide barricades with blinking beacon light at all open trenches and other excavations.
- C. Provide protection as specified in Division 32 Section, PLANTING for plant life designated to remain.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

202 TEMPORARY CONSTRUCTION FENCING

- A. Prior to any excavation work the Contractor shall provide temporary construction fencing as shown on the Drawings and/or as required to completely protect the work area and injury to persons or property.
- B. The Contractor shall furnish and install temporary fencing of the following type in all areas where existing fencing lengths are inadequate to enclose the construction.
 - 1. Chain link fencing, six feet high min., fabricated from No. 9 gauge galvanized wire woven in a 2- inch diamond mesh with top salvage and having galvanized steel H or pipe intermediate and terminal posts. Post spacing shall not exceed eight feet (8') on center. Cross bracing, reinforcing gates and other parts of fencing shall conform to standard Specifications of the National Chain Link Manufacturers Association. All posts shall be set into temporary concrete footings or on temporary chain link fencing stands as approved by the Landscape Architect.
- C. The contractor shall furnish and install matching gates equipped with suitable locks, other hardware, and, where necessary, provide access for construction apparatus or fire-

fighting equipment. The Owner shall be provided with a copy of the key used for all locks.

203 TEMPORARY WORK IN PUBLICWAYS

- A. Prior to commencing any work in public ways and other areas which are legally used by vehicles or pedestrians, the Contractor shall submit in writing the proposed methods of protection to the Official. Work shall not be commenced in these areas until written approval is received from the Official.
- B. In general, all excavations in public ways shall be protected by substantial barriers which will offer complete protection against accidents for pedestrian and vehicular traffic without interrupting the normal flow of traffic. All barriers must be properly lighted with electric or battery powered safety lights and must be maintained in good working order by the Contractor for the duration of the time such barriers are required.
- C. Trenches across sidewalks shall be completely covered with a temporary walkway, comprised of properly supported nominal 2-inch-thick lumber laid with butt joints and covered with exterior grade plywood, one-half of an inch minimum thickness. Provide continuous 2-inch by 4-inch (nominal) rails and posts secured to the temporary walkway conforming to the requirements of the Occupational Safety and Health Act (OSHA).
- D. Wherever temporary chutes are to be extended over sidewalks or other pedestrian or vehicular traffic areas, the bottom and sides of the chutes shall be provided with continuous dustproof and weatherproof lining, applied to the exterior surfaces.
- E. The Contractor will be required to furnish, install, and maintain in good condition, at no increase in Contract Price or Contract Time, all other safety measures which in the judgment of the Official are required to protect the public from accidents due to work performed under this Contract. This requirement is supplementary to the Contractor's rights and obligations to provide and employ safety measures as s/he may deem necessary or as may be required by law or standard safety practices.

204 TREE PROTECTION FENCING

- A. See Division 31 Section, SITE CLEARING AND PREP for tree protection fencing requirements.
 - 1. Stake or spray layout of all proposed work under the driplines of existing trees for approval before beginning construction. Install fencing over the greatest extent feasible within the driplines of the trees, allowing for the work.
 - 2. Maintain fencing in sound condition until project completion. Do not relocate installed fencing without the express approval of the Landscape Architect or Owner.

PART 3 – EXECUTION

3.01 BARRIERS, BARRICADES & ENCLOSURES

- A. Install temporary items as specified herein and in the Drawings or, where not specified, to level of quality suitable for the intended purpose as judged by the Landscape Architect.

3.02 REMOVAL OF TEMPORARY BARRIERS, ENCLOSURES & PROTECTIONS

- A. Remove temporary barriers, barricades, fencing, enclosures, and protections as warranted by the progress of the Work and prior to Substantial Completion.

- B. Remove in-ground elements of all temporary barrier installations (if any) completely.
Grade site as noted.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition at start of
work or as specified elsewhere in the Contract Documents.

END OF SECTION

**SECTION 01 57 00
TEMPORARY CONTROLS**

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.
- B. The requirements set forth in this section of the specifications apply to cross-country areas, river and stream crossings, and construction in and adjacent to wetlands, unless otherwise specifically stated.
- C. Prior to commencement of work, the Contractor shall meet with the Owner, Landscape Architect and representative from the Town to develop mutual understandings relative to compliance of the environmental protection program.

1.01 REQUIREMENTS INCLUDED

- A. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and related areas under Contractor's control; remove physical evidence of temporary facilities at completion of work.

1.02 RELATED REQUIREMENTS

- A. Section 01 57 00 - ACCESS
- B. Section 01 74 00 - CLEANING UP

1.03 NOISE CONTROL

- A. Noise levels shall not exceed those stipulated by Occupational Safety and Health Administration.

1.04 DUST CONTROL

- A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere.

1.05 SURFACE WATER AND GROUNDWATER CONTROL

- A. Provide methods to control surface water to prevent damage to project, site, and adjoining properties.
- B. Dispose of drainage water in a manner to prevent flooding, erosion, sedimentation, or other damage to any portion of the site or to adjoining areas and properties.

1.06 DEBRIS CONTROL

- A. Maintain all areas under Contractor's control free of extraneous debris.

- B. Initiate and maintain a specific program to prevent accumulation of debris at construction site.
 - 1. Provide containers for deposit and removal of debris.

1.07 POLLUTION CONTROL

- A. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations.
- B. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- C. Provide systems for control of atmospheric pollutants.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 NOTIFICATION AND STOPPAGE OF WORK:

- A. The Landscape Architect will notify the Contractor in writing of any observed non-compliance with the Contract Documents. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work through the Landscape Architect until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.
- B. The notification process described under paragraph A above does not relieve the Contractor of the contractual obligation for continuous compliance with the Contract Documents.

3.02 AREA OF CONSTRUCTION ACTIVITY:

- A. Insofar as possible, the Contractor shall confine their construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

3.03 PROTECTION OF WATER RESOURCES:

- A. The Contractor shall not pollute water bodies with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.

- B. Special measures should be taken to insure against spillage of any pollutants into public waters.

3.04 PROTECTING AND MINIMIZING EXPOSED AREAS:

- A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided.
- B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to ensure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Landscape Architect.

3.05 LOCATION OF STORAGE AREAS:

- A. The location of the Contractor's storage areas for equipment and/or materials shall be located on cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Landscape Architect. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Landscape Architect.
- B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control shall be employed to protect any downstream areas from siltation.
- C. There shall be no storage of equipment or materials within one hundred feet of delineated wetlands as indicated on the Drawings.
- D. Storage areas in cross-country locations shall be restored to pre-construction conditions with the planting of native species of trees and shrubs.

3.06 PROTECTION OF LANDSCAPE:

- A. The Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without written authority from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Landscape Architect. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees which are not to be removed, particularly overhanging branches and limbs. The Contractor shall, in any event, be responsible for any damage resulting from such use.
- B. Branches, limbs, and roots shall not be cut except by permission of the Landscape Architect. All cutting shall be smoothly and neatly done without splitting or crushing. When there is unavoidable injury to branches, limbs and trunks of trees, the injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.
- C. Where, in the opinion of the Landscape Architect, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his blasting or other operations, the Landscape Architect may require the Contractor to adequately protect such trees by placing boards, planks, poles or fencing around them. Any trees or landscape

feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the expense of the Contractor. The Landscape Architect will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of.

3.07 CLEARING AND GRUBBING:

- A. The Contractor shall clear and grub only on the Owner's land or the Owner's easements, and only the area required for construction operations, as approved by the Landscape Architect.

3.08 DISCHARGE OF DEWATERING OPERATIONS:

- A. Any water that is pumped and discharged from the excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- B. Under no circumstances shall the Contractor discharge water to the areas designated as wetlands. When constructing in a wetlands area, the Contractor shall discharge water from dewatering operations directly to the nearest drainage system, stream, or waterway after filtering by an approved method.
- C. The pumped water shall be filtered through filter fabric and baled straw, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.

3.10 DUST CONTROL:

- A. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust.
- B. Calcium Chloride shall not be used for dust control within wetland resource areas, buffer zones, drainage basins, or in the vicinity of any source of potable water.

3.11 SEPARATION AND REPLACEMENT OF TOPSOIL:

- A. Topsoil shall be carefully removed from areas where excavations are to be made, and separately stored to be used again as directed. The topsoil shall be stored in an area acceptable to the Landscape Architect and adequate measures shall be employed to prevent erosion and drying out of excavated topsoil material.

END OF SECTION

SECTION 01 57 13: TEMPORARY EROSION & SEDIMENT CONTROL

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

- A. Provide all work and take all measures to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials (including excavation and backfill) within protected working area as to prevent damage to any stream or wetlands.
 - 1. Compost filter sock
 - 2. Drain inlet protection

1.03 REFERENCE

- A. The Contractor is responsible for ensuring that all work conducted at the Site, including but not limited to sediment and erosion control, complies with the City Regulations. In addition, all work shall be conducted in accordance with "Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity", published by the United States Environmental Protection Agency.

1.04 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with Division 01 Section, SUBMITTAL PROCEDURES:
 - 1. Two weeks prior to the start of the work, submit to Landscape Architect, for review, a plan with detailed sketches showing the proposed methods to be used for controlling erosion during construction.

1.05 QUALITY ASSURANCE

- A. Use acceptable procedures, including use of water diversion structures, diversion ditches, settling basins, and sediment traps.
- B. Operations restricted to areas of work indicated on drawings and area which must be entered for construction of temporary or permanent facilities.
- C. If construction materials are washed away during construction, remove materials from fouled areas.
- D. Stabilize diversion outlets by means acceptable to Landscape Architect.
- E. Landscape Architect has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices

or methods as necessary to control erosion.

PART 2 – PRODUCTS

2.01 FILTER TUBE

- A. Filter tube shall consist of biodegradable mesh tube filled with wood chips or compost. Filter tube shall be 12-inch diameter. Tubes shall be manufactured by Filtrex, Silt Sock, or an approved equal.

- 1. Stakes shall be hardwood.

2.02 INLET PROTECTION

- A. Inlet protection for catch basin protection shall be Silt Sack or an approved equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste into or alongside any body of water or into natural or man-made channels.

3.02 GENERAL INSTALLATION PROCEDURES

- A. In the event that sedimentation or siltation prevention measures used by the Contractor provide to be inadequate the Contractor shall be required to adjust their operations to the extent necessary to prevent such sedimentation or siltation from occurring. Any damage or degradation caused by inadequate controls must be restored by the Contractor at no additional cost to the Owner.
- B. All sedimentation and erosion control measures shall be in accordance with all permits, regulatory requirements, plans and specifications.
- C. Straw wattle and inlet protection shall be installed prior to the start of construction activities. Locate sedimentation barriers, surrounding stored material, approximately 6 feet from material.
- D. The Contractor shall keep all drains clear of mud, silt, debris, or other objectionable materials resulting from construction operations.
- E. The Contractor shall minimize the amount of bare earth exposed at any one-time during construction and minimize the length of time bare earth is exposed.
- F. Baled hay and filter materials shall be placed to form temporary water stops, dams, diversions, dikes, berms, and for other uses connected with water pollution control. As directed by the Landscape Architect bales may be disposed by the Contractor as best suits field conditions and requirements.
- G. Additional erosion control in the form of hay bales, filter tube, silt fence, etc. shall be employed by the Contractor as required to prevent erosion of topsoil or other materials.
- H. Install sedimentation barriers in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Landscape Architect.
- I. Construct earth berms or diversions to intercept and divert runoff water from critical areas.

- J. Protect catch basins from sedimentation by installing straw wattle around the basin or siltation fabric under grating casting.
- K. Discharge silt-laden water from excavations onto filter fabric mat and/or straw wattle or sediment traps to ensure that only sediment-free water is returned to waterways.
- L. Do not place excavated soil material adjacent to waterway in manner that will cause it to wash away by high water or runoff.
- M. Prevent damage to vegetation by excessive watering or silt accumulation in the discharge area.
- N. Do not dump spoiled material into any salt marsh, streams, wetlands, surface waters, or unspecified locations.
- O. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands, or surface waters.
- P. Do not pump silt-laden water from trenches or excavations into salt marsh, surface waters, streams, wetlands, or natural or man-made channels leading thereto.
- Q. Prevent damage to vegetation adjacent to or outside of construction area limits.
- R. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, wash-water from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.
- S. Do not alter flow line of any stream unless indicated or specified.
- T. Erosion control shall be reviewed regularly to keep in good condition especially following any rain events.
- U. Clean and dispose of debris from sedimentation barriers on a weekly basis.
- V. Upon completion of work and upon approval of Landscape Architect, remove and dispose of sedimentation barriers.

3.03 FILTER TUBE INSTALLATION

- A. Compost filter tube may be place on bare soil, grass, erosion control blankets, or paved surface.
- B. Install perpendicular to storm water flow, across slope, swale, ditch, or channel.
- C. Anchor to the ground using a 2-inch by 2-inch (nominal) 36-inch long hardwood post every 10 feet on center. Under concentrated flow conditions stake posts every 5 ft. on center.
- D. Stakes shall be driven through the center of the Filter Tube and installed a minimum of 12 inches into the existing soil.
- E. Edges of the Filter Tube shall be turned upslope to prevent flow around the ends of the Filter Tube.
- F. For 2:1 slopes additional Tubes may be placed every 20-50 feet along the slope to further reduce erosion.
- G. 12-inch Filter Tubes may be used for stormwater ditch checks and small channels (additional staking required, every 4 feet on center).

- H. Installed height of the Filter Tube in the field shall be 12-inch diameter equals effective height of 9.5 inches.
- I. Routinely inspect Compost Filter Tube after installation and runoff events to ensure adequate hydraulic flow-through, proper function and performance. Sediment should be removed once it reaches half the height of the Filter Tube.
- J. Contractor shall removal Filter Tube only upon Substantial Completion or approval by Landscape Architect. Unless otherwise directed by Landscape Architect or Owner, compost tubes can be emptied, compost spread on site, and tube disposed of offsite.

3.4 INLET PROTECTION

- A. Follow manufacturer's directions for installation.

END OF SECTION

SECTION 01 58 00: PROJECT SIGNS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The Contractor shall furnish and install exterior signs in accordance with the design shown on the Drawings and/or included in the Specifications including:
 - 1. Six (6) small (two feet by four feet) "Pardon our Appearance" temporary construction signs to be posted.
 - 2. Two signs shall be posted at each project location, on construction fencing where access is restricted.
- B. The signs shall be maintained in good condition by the Contractor for the duration of the Project and removed only with written approval of the Official.
- C. No signs, notices, or advertisements shall be displayed without written approval of the Official.

1.3 SUBMITTALS

- A. Submit samples of color and a Shop Drawings indicating lettering layouts to Landscape Architect for approval.
 - 1. Electronic file with sign layout to be provided to the Contractor.
 - 2. One graphic shall be produced for all signs. Smaller signs to be reduced in scale.

PART 2 – MATERIALS

2.1 "PARDON OUR APPEARANCE" SIGNS

- A. "Pardon Our Appearance" signs shall be 2 feet by 4 feet and shall be mounted on marine grade plywood panel or approved equal, securely mounted to wood posts, as directed by the Landscape Architect. Sign shall be professionally printed.
- B. Sign shall be securely mounted with galvanized metal attachments and shall be framed so as to be durable. All attachments and mountings shall be child-safe and vandal resistant.

PART 3 – EXECUTION

3.1 PLACEMENT

- A. Signs shall be installed facing the street or access point to the construction area so as to be visible and inform the general public. Where possible, the sign should be located so as not to conflict with the construction activity nor to require moving during the construction process.
- B. The construction sign shall be maintained in satisfactory condition during construction and then removed and disposed of legally by the Contractor just prior to the final acceptance of work.

END OF SECTION

**SECTION 01 62 00
SUBSTITUTIONS**

PART 1 – GENERAL

1.01 GENERAL

- A. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed after award of the Contract are considered requests for substitutions. The following are not requests for substitutions:
 - 1. Substitutions requested during the bidding period and accepted by Addendum prior to award of the Contract.
 - 2. Revisions to the Contract Documents requested by the Owner.
 - 3. Specified options included in the Contract Documents.
 - 4. Contractor's compliance with regulations issued by governing authorities.
- B. Substitution Request Submittal: The Landscape Architect will consider request for substitution received within 10 days after execution of the Contract, provided that the proposed substitution does not compromise the Contractor's ability to achieve the Substantial and Final Completion dates required in the Contract Documents. The Contractor shall include a minimum of 30 days for the substitution approval process into the project schedule, as well as the potential for the substitution to be rejected with the requirement to provide specified products.
 - 1. Submit three copies of each request for substitution. Submit requests according to procedures required for change-order proposals.
 - 2. Identify the product or method to be replaced in each request. Include related Specification Section and Drawing numbers.
 - 3. Provide documentation showing compliance with the requirements for substitutions and the following information.
 - a. Coordination information, including a list of changes needed to other Work that will be necessary to accommodate the substitution.
 - b. A comparison of the substitution with the Work specified, including performance, weight, size, durability, and visual effect.
 - c. Product data, including Drawings and descriptions of products and installation procedures.
 - d. Samples, where applicable or requested.

- e. A statement indicating the effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the substitution on Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. Certification that the substitution conforms to the Contract Documents and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may become necessary because of the failure of the substitution to perform adequately.
4. Landscape Architect's Action: If necessary, the Landscape Architect will request additional information within one week of receipt of a request for substitution. The Landscape Architect will notify the Contractor of acceptance or rejection within two weeks of receipt of the request. Acceptance will be in the form of a change order.
- a. Use the product specified if the Landscape Architect cannot make a decision within the time allocated.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Conditions: The Landscape Architect will receive and consider a request for substitution when one or more of the following conditions are satisfied. Otherwise, the Landscape Architect will return the requests without action except to record noncompliance with these requirements.
- 1. Extensive revisions to the Contract Documents are not required.
 - 2. Changes are in keeping with the intent of the Contract Documents.
 - 3. The specified product cannot be provided within the Contract Time. The Landscape Architect will not consider the request if the specified product cannot be provided as a result of failure to pursue the Work promptly.
 - 4. The request is related to an "or-equal" clause.
 - 5. The substitution offers the Owner a substantial advantage, in cost, time, or other considerations, after deduction compensation to the Landscape Architect for redesign and increased cost of other construction.
 - 6. The specified product cannot receive approval by a governing authority, and the substitution can be approved.

- B. The Contractor's submittal and the Landscape Architect's acceptance of Shop Drawings, Product Data, or Samples for construction not complying with the Contract Documents do not constitute an acceptable request for substitution, nor do they constitute approval.

PART 3 – EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 71 23: CONSTRUCTION LAYOUT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work under this section shall consist of field staking the horizontal and vertical alignment of all essential features and proposed work, including walls, curbs, walkways, fencing, electrical and utility structures, plantings, furnishings, play equipment, and other related features as shown on the plans, by a Massachusetts-registered Professional Engineer or Land Surveyor. The Contractor shall familiarize himself with the existing conditions and shall be responsible for locating or re-establishing survey field ties, property lines, and benchmarks indicated on the plans.

PART 2 – MATERIALS

2.1 LAYOUT & STAKING

- A. The Contractor shall be responsible for furnishing all stakes, pins, and grade markings as required to implement the work of layout and staking and shall make all field adjustments ordered by the Landscape Architect at no extra cost to the Owner.
- B. Upon request by the Landscape Architect, the Contractor shall make available to the Owner survey instruments and operator necessary to check the proposed vertical and horizontal alignments at no extra cost.

PART 3 – EXECUTION

3.1 SURVEY LAYOUT

- A. The Contractor shall use the alignments shown on the plans to establish the layout of all proposed features and shall perform field adjustments as ordered by the Landscape Architect.
- B. All layout shall be by the dimensions noted on the Contract Drawings. Do not scale directly from the plans. If clarification regarding a dimension or intended layout procedure is required, contact the Landscape Architect.
- C. All dimensions marked on the Drawings with "+/-" or "(Confirm)" or "Verify in Field" are intended for confirmation of conformance to the expected conditions and (where applicable) that acceptable slopes and clearances are provided. Once layout has been established using other dimensions, the Contractor shall verify these dimensions (to within a tolerance of 1/2-inch) and report any discrepancy to the Landscape Architect for acceptance or instruction regarding adjustment. These confirmation dimensions should not be used to layout elements.
- D. The Surveyor shall lay out the essential or necessary grades and locations of site furnishings, footings, pavements, utilities, structures, and other proposed elements. The surveyor shall verify the location of any existing spikes, stakes, pipes, drill holes, etc. and shall be responsible for their accuracy. Proposed

features shall be located in relation to dimensions shown on the drawings and as adjusted by the Landscape Architect.

- E The Contractor shall inform the Landscape Architect when the general layout is completed and shall not begin excavation until the Landscape Architect approves the various alignments. Any discrepancies encountered in field conditions shall be reported to the Landscape Architect immediately and shall be adjusted as directed.
- F. The Contractor shall be responsible for maintaining the correct vertical and horizontal alignment of all elements, which responsibility shall not be waived by the Landscape Architect's approval of basic layout and stakeout.

END OF SECTION

**SECTION 01 74 00
CLEANING UP**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Consult the individual Sections of the specifications for cleaning of Work installed under those Sections.

1.02 CLEANING DURING CONSTRUCTION

- A. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on the site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Maintain the Site free from accumulations of waste, debris, and rubbish.
- D. Provide on-site containers for collection of waste materials and rubbish.
- E. At the end of each day, remove and legally dispose waste materials and rubbish from site.
- F. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- G. Disposal of materials shall be in compliance with all applicable laws, ordinances, codes, and by-laws.

1.03 FINAL CLEANING

- A. Prior to submitting a request to the Landscape Architect to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.
- B. Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- C. Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.

- D. Employ experienced workmen or professional cleaners for final cleaning.
- E. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.
- F. Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.
- G. All broken or defective materials caused by the Contractor's Work shall be replaced at the expense of the Contractor.
- H. Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from finished surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.
- I. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- J. Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.
- K. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 01 77 00: CLOSEOUT DOCUMENTATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 01, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.2 SCOPE OF WORK

- A. The work to be performed under this Section shall include the compilation and submittal of all required maintenance manuals, maintenance and repair products, warranty information, detailed procedures, product information, submittal records, as-built drawings, and certifications of all materials and equipment for the Landscape Architect's approval. Additional submissions may also be required as stipulated in the technical specification sections.
- B. Upon Final Completion of all park construction, the contractor shall submit: three complete copies of a park maintenance manual, and three copies of an as-built drawing set, with three digital (DVD) copies of the as-built drawings.
- C. The Town will not issue the final check for park retainage until the submittal and approval of the maintenance manual and as-built drawings.

PART 2 – SUBMITTALS

2.1 MAINTENANCE MANUAL

- A. The Maintenance shall be in the form of a three-ring binder, organized, and tabbed into appropriate sections.

2.2 PARK MAINTENANCE KIT

- A. At the completion of construction, the Contractor shall provide to the Town's Department of Public Works, Parks Maintenance Division, a Maintenance Kit containing all touch-up paint, maintenance instructions, spare parts, and other maintenance materials provided by the manufacturers of all improvements.
- B. The Maintenance Kit shall be delivered in a single container clearly labeled with the Park Name, and each item shall be identified as to the source.

2.3 AS-BUILT DRAWINGS

- A. As-Built drawing shall be a complete and accurate record that incorporate any and all

changes to the construction plan set issued at the time of contract initiation. As-built drawings shall be clearly marked and annotated and shall include but not be limited to: all field changes, change orders, and supplemental drawings provided by the Landscape Architect.

- B. As-Built Drawings shall include complete records of all water, drainage, and electric utilities installed, including sizing, location, and inverts of all drainage pipes and structures, and sizing and location of all water service lines and electrical conduits.
- C. The DVD shall include an electronic copy of all as-built drawings in AutoCAD version 2018 or earlier. Files shall be in both DWG and PDF formats.

PART 3 – EXECUTION

3.1 SUBMISSIONS

- A. Submit all documents and data in a collated, manual format, with three (3) manuals to be submitted. Include a Table of Contents of the material for reference. The submittal is to be entire and complete, addressing all requirements listed above.

END OF SECTION

**SECTION 11 68 00
PLAYGROUND EQUIPMENT**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. All references to products by manufacturer, trade name or performance Specifications bearing the connotation "or approved equal" shall be as determined by the Landscape Architect and the City.

1.02 WORK INCLUDES

- A. The work of this section includes installation of the Playground equipment noted specifically as being purchased by the City of Arlington directly from the product vendors. The City's purchase includes delivery to the project site. **Contractor is responsible for unloading equipment from delivery vehicles and for furnishing equipment for installation of any preassembled components.** Playground equipment not specifically noted as Purchased by Owner, shall be furnished and installed by the Contractor and noted as salvaged from on site as indicated in the Contract Documents.
- B. To be included, but not limited to the following (Installation only) for play equipment listed below at each playground
- C. Stratton Playground (Play Equipment by Kompan and Landscape Structures, Inc. LSI)
 - 1. Kompan
 - 1) 5-12 Age Group Custom Ramp Structure
 - 2) Single Bay In-Ground Swing Frame with Tot Swing
 - 3) Universal Carousel
 - 4) 2-5 Age Group Large Play Tower with Slide
 - 5) Arc Tunnel
 - 6) 4-bay In-Ground Swing Frame with 6 Belt Swings and 1 Shell Nest Swing
 - 7) Custom Overhead Ladder
 - 2. LSI
 - 1) Musical Chimes, total of 3
 - 3. Reinstall Salvaged Steppers
 - 1) Total of 12
 - 4. Reinstall Gaga Pit
- D. Bishop Playground (Play Equipment by Playworld, Berliner and LSI)
 - 1. Playworld
 - 1) 5-12 Main Climbing Structure "Design 21522-JM-A with three additional steppers"
 - 2) Large Unity overhead event
 - 3) Standard 3-bay swings with belt seats

- 4) Accessible swing seat for 8 foot swing
2. Berliner
 - 1) New Ropes, Nets and Cables Installation for Existing Berliner Structure (includes new hardware)
3. LSI
 - 1) Musical Chimes, total of 3
4. Reinstall Salvaged Rubber Tires
 - 1) Total of 4
- E. Peirce Playground (Play Equipment by LSI and Kompan)
 1. LSI
 - 1) 5-12 Age Group "Design MEO22329"
 - a) 5-12 Main Structure with Slides and Net Climber
 - b) We-Go-Round Spinner with custom artwork
 - c) Horizontal Ladder Station
 - 2) Musical Chimes, total of 3
 2. Kompan
 - 1) 4-bay In-Ground Swing Frame with 6 Belt Swings and 1 Shell Nest Swing
- F. The reps for the play manufacturers are listed below for installation related questions
 1. Kompan – Erik Walsh (eriwal@kompan.com)
 2. LSI – John McConkey (john.mcconkey@obrienandsons.com)
 3. Playworld and Berliner – Joe McMahon (jmcmahon@utilplayus.com)

1.03 REFERENCES

- A. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the Town of Arlington and coordinate all work under this Section therewith.
- B. The following related items are included under the Sections listed below:
 1. Section 01 23 00 – Alternates
 2. Section 12 93 00 – Site Furnishings and Improvements
 3. Section 31 10 00 – Site Clearing and Prep
 4. Section 31 10 00 – Excavation Filling and Grading
 5. Section 32 12 16 – Asphalt Paving
 6. Section 32 13 13 – Concrete
 7. Section 32 16 00 – Curbing
 8. Section 32 18 00 – Playground Protective Surfacing
 9. Section 32 18 00 – Recreational Court Surfacing
 10. Section 32 31 00 – Chain Link Fence

1.04 SUBMITTALS

- A. Material and Workmanship Warranty shall be furnished by the manufacturer after installation by manufacturer-certified installer.
- B. Product Liability Insurance Certificate(s): The manufacturer(s) of the new playground components shall have in effect at the time of the completed installation and maintain an insurance policy covering completed operations (Product Liability) with a minimum limit of \$1,000,000.00 (One Million Dollars).
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation.
- D. Supply documentation stating the system installer is an approved installer by the respective manufacturers.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Contractor is responsible for coordinating the delivery of Owner-purchased equipment with the City and Manufacturer, including off-loading, storing and securing all of the equipment on-site safely within temporary construction fencing prior to the installation.
- B. Deliver materials in manufacturer's original unopened and undamaged packages with labels legible and intact.
- C. Store materials in unopened packages in a manner to prevent damage from the environment and construction operations.
- D. Handle in accordance with manufacturer's instructions.

1.06 DEFINITIONS

- A. The following items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highway and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 2. A.S.T.M. - American Society for Testing and Materials. The following standard specifications are applicable to the associated items as listed.
 - 1) F1487 ...Playground Equipment for Public Use
 - 2) A36...Steel
 - 3) A153...Zinc Coating (hot-dip) on hardware
 - 4) A307...Carbon Steel bolts 66000 psi tensile
 - 3. CPSC - Consumer Product Safety Commission.
 - 4. ADA - Americans with Disabilities Act and its current regulations.
 - 5. MAAB: Massachusetts Architectural Access Board Rules and Regulations
 - 6. AWS: American Welding Society
 - 7. SSPS: Steel Structures Painting Council

1.07 QUALITY ASSURANCE

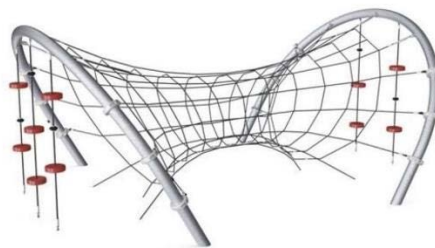
- A. Playground installation contractor shall be certified by the manufacturer of the respective equipment and shall coordinate on-site inspections during installation with manufacturer representatives as required for the manufacturers' certification and warranty of the materials and workmanship of the completed installation.
- B. The playground installation contractor shall provide written certification by a Certified Playground Safety Inspector (CPSI) that the installed equipment conforms to all applicable safety and accessibility standards including, but not limited to ASTM, CPSC, ADA, and MAAB.

The Owner reserves the right to retain an independent CPSI to inspect the playground equipment and surfacing after reinstallation. The Contractor will be responsible for correcting any deficiencies at their own expense to the satisfaction of the Landscape Architect.

PART 2 - PRODUCT

2.01 OWNER PURCHASED 5-12 PLAYGROUND EQUIPMENT

- A. Please refer to the drawings for the details about play components but shown below are renderings for the key components for each playground
- B. Stratton Playground



- C. Bishop Playground



Another View Of Above



D. Peirce Playground





E. Refer to the detailed instructions provided by the manufacturer in APPENDIX A.

2.02 EXECUTION

- A. Contractor is responsible for coordinating the delivery of Owner-purchased equipment with the City and Manufacturer, storage and securing all of the equipment on-site safely within temporary construction fencing prior to the installation.
- B. Equipment shall be assembled to conform to the manufacturer's drawings. All fastenings shall be made as shown on the manufacturer's installation instructions and shall be securely tightened. All work shall be done so that no hazardous projections remain on the finished work.
 - 1. Cleanup: Upon completion of the work under this Section, all excess materials and debris resulting from work under this Section shall be cleaned up, removed from the Site, and properly disposed.
- C. Manufacturer's Guarantees and Insurance
 - 1. Product Liability Insurance: The manufacturer of the playground equipment shall maintain, and have in effect at the time of the completed installation, an insurance policy covering completed operations (Product Liability) with a minimum limit of \$1,000,000.00 (One Million Dollars). A certificate of insurance shall be available to the project owner on request.
 - 2. Guarantees: The manufacturer shall furnish a written guarantee, covering the replacement of any damaged Structures or components, at no extra charge for the period of 15 (Fifteen) years. This guarantee does not cover Structures damaged by improper use or vandalism. Labor is not covered in this guarantee.
- D. Warranties
 - 1. The Contractor shall warrant that all structures and/or equipment installed will conform in kind and quality to the specifications set forth above, and will be free of defect in workmanship and material.
 - 2. The Contractor shall offer a 10-year limited warranty for all aluminum and all posts, clamps, beams, and caps against structural failure due to corrosion, deterioration, or workmanship (cosmetic issues excluded).
 - 3. The Contractor shall offer a 10-year limited warranty for all plastic and steel components against structural failure due to corrosion, deterioration, or workmanship (cosmetic issues excluded).

4. The Contractor shall offer a 1-year limited warranty for all moving parts, swing seats and swing hangers bumpers and other equipment not included above against failure due to corrosion, deterioration, or workmanship.
5. An authorized representative of the play equipment manufacturer must inspect and approve the completed installation. The play equipment will not be accepted by the play equipment manufacturer or the Owner until they are satisfied with the installation. No additional compensation will be given for any necessary corrective work. Contractor shall submit written certification from Manufacturer's Representative that all play equipment has been completely installed in accordance with manufacturer's requirements.

END OF SECTION

SECTION 12 93 00
SITE FURNISHINGS AND IMPROVEMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract and Division 1 General Requirements, apply to this section.

1.2 DESCRIPTION OF WORK

- A. The work of this section includes installation of the site furnishings noted specifically as being purchased by the Town of Arlington directly from the product vendors. The City's purchase includes delivery to the project site. **Contractor is responsible for unloading site furnishings from delivery vehicles.** All furnishings in this section not specifically noted as Purchased by Owner, shall be furnished and installed by the Contractor whether salvaged from on site or new as indicated in the Contract Documents.

1. Dero - Heavy-Duty Hoop Bike Rack, (2) per site, TOTAL OF 6
2. DuMor 32-Gal Receptacle with Bonnet Top, (1) per site, TOTAL OF 3
3. DuMor 6' Slat Backed Bench, TOTAL OF 10
4. DuMor Oval Picnic Table with (6) Seats, TOTAL OF 4
5. DuMor Oval Picnic Table with (8) Seats, TOTAL OF 3
6. JayPro Basketball Goal – "The Titan", TOTAL OF 4
7. JayPro Basketball Goal – "The Church Yard", TOTAL OF 2
8. Reinstalled Salvaged Community Board
9. Reinstalled Salvaged Memorial Stone

- B. The following items shown on the Drawings and/or noted herein shall be furnished and installed under their Sections of the specifications:

1. Concrete for concrete footings under 32 13 13 CONCRETE.

1.3 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:

1. Section 01 23 00 - Alternates
2. Section 31 10 00 – Site Clearing and Preparation
3. Section 31 23 00 – Excavation Filling and Grading
4. Section 32 13 13 – Concrete
5. Section 32 18 16.13 – Playground Protective Surfacing

1.4 SUBMITTALS

- A. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements prior to installation.

1.5 DELIVERY, STORAGE AND HANDLING

- A. The City's purchase includes delivery to the project site. **Contractor is responsible for unloading site furnishings from delivery vehicles.** Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.6 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- A. Substrates: Proceed with work only when substrate construction and penetrating work is complete.

1.7 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS AND EXECUTION (Combined)

2.1 OWNER PURCHASED SITE FURNITURE

- A. Please refer to the drawings for the details about site furniture locations.
- B. Refer to APPENDIX A for installation instructions.
- C. The rep for MEOBrien is John McConkey (john.mcconkey@obrienandsons.com)
 - 1.) Dero, DuMor and JayPro products

2.2 Reinstalled Salvaged Community Board

- A. Cleanly saw embedded posts to remove decaying wood from base of post.
- B. Paint refurbishment system for community board to be one coat of primer over wood and 2 coats of acrylic gloss. Color to be determined by Landscape Architect from Sherwin Williams, www.sherwin-williams.com/ or approved equal.
 - 1.) Submit product information for refinishing materials.
- C. Reinstall Community Board on concrete pad mounted using concealed post tie. Concealed post tie to be galvanized steel with 1" standoff height powder coated base to reduce potential for future decay. Product to be Simpson Strong-Tie CPTZ Concealed Post Tie or approved equal. Fasten per manufacturer's recommendations.
https://www.strongtie.com/retrofitpostbases_postbases/cptz_base/p/cptz

2.3 Salvaged Memorial Stone

A. Chip off any existing concrete footing from Memorial Stone, taking care to avoid damage to Memorial.

B. Power wash Memorial Stone and reset per detail in drawings.

2.4 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

**SECTION 31 10 00
SITE CLEARING AND PREPARATION**

PART 1 – GENERAL

1.0 RELATED DOCUMENTS

This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract and Division 1 General Requirements, apply to this section.

1.1 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment, and services necessary to complete the work of this Section as specified herein, as shown on the drawings, or both. The Contractor shall coordinate site preparation and demolition activities for each phase of construction. Refer to the Drawings for Phasing and items to be salvaged and relocated.
- B. The work of this Section includes, but is not limited to, the following:
 - 1. Staking layout, limits of work and extent of grading
 - 2. Protection of existing improvements to remain
 - 3. Tree protection
 - 4. Clearing and grubbing
 - 5. Stripping and stockpiling topsoil
 - 6. Saw cutting existing pavement
 - 7. Removing bituminous concrete pavement
 - 8. Pulverizing and blending bituminous concrete with existing gravel base
 - 9. Demolition, removal and legal off-site disposal of all existing above grade and subsurface improvements as indicated on the Drawings and as required by the work of this Contract
 - 10. Salvaging materials

1.2 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 23 00 – Excavation Filling and Grading
 - 4. Section 32 16 00 – Asphalt Paving
 - 5. Section 32 13 13 – Concrete
 - 6. Section 32 18 16.13 – Playground Protective Surfacing
 - 7. Section 32 90 00 – Planting
 - 8. Section 32 91 00 – Loam and Planting Preparation
 - 9. Section 32 92 00 – Turf and Grasses
 - 10. Section 33 40 00 – Storm Drainage Utilities

1.3 PROJECT CONDITIONS

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional cost will be allowed because of lack of full knowledge of existing conditions.

- B. Preparation and Workmanship: Except as otherwise specified, site preparation, demolition work and clean up shall be the work of the Contractor. Any item of work not specifically designed to be accomplished by a particular subcontractor shall be considered work of the Contractor.
- C. Traffic: Conduct site clearing and demolition operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- D. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing buildings, paving, services and all other improvements indicated to remain in place. Locate and identify existing underground utilities within project limit lines. Provide adequate means of protection of all utilities to remain. The Contractor shall contact "Dig-Safe" at 1-888-344-7233 prior to beginning any excavation work. The Contractor shall be solely responsible for locating all underground utilities prior to the commencement of work. Locations of existing utilities on the site plans are not warranted to show all existing utilities under or above ground. Existing utilities indicated on the site plans are shown only for the convenience of the Owner's representatives.
 - 1. Protect improvements and surfacing on Owner's property.
 - 2. Restore improvements damaged during construction to their original condition, as acceptable to the Owner and any agencies having jurisdiction.
- E. Protection of existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, damaging heat from paving equipment, excess foot or vehicular traffic, or parking of vehicles within tree canopy drip lines. Provide temporary guards, fencing or any other necessary precautions to protect trees and vegetation to remain.
 - 1. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during the course of construction operations.
 - 2. Repair trees and vegetation indicated to remain that are damaged by construction operations, in a manner acceptable to the Landscape Architect. Employ a licensed arborist to repair damage to trees and shrubs.
 - 3. Replace trees and vegetation that cannot be repaired and restored to full-growth status, as determined by a licensed arborist. Trees determined to be removed due to damage caused by the work of this project shall be removed and replaced at the Contractor's expense with a quantity of approved tree species that match the total tree caliper surface area of the removed trees as measured 12-inches above original grade. Damage requiring tree removal shall include damage to roots, trunk or branches where protection would have prevented such damage. The extent of damage requiring tree removal shall include any one or more of the following: permanent scarring of tree bark, loss of branches or portions of branches that disfigure the tree character, compaction or material contamination of the root zone, damage to roots beyond excavation payment lines, irreversible decline in tree health due to lack of watering.
- F. Dust and Pollution Control: Provide dust control for dust generated by the work of this project. Dampen surface as required or use other approved method. Comply with pollution control requirements of the Town of Andover Board of Health.
- G. Salvageable Improvements: Carefully remove items indicated to be salvaged or reused, and store at the site for future use. Protect such items from accidental damage, vandalism and theft.

- H. Bench Marks: Locate, protect and maintain bench marks, monuments, control points and project engineering reference points.
- I. Regulatory controls: All work within this Section must comply with the requirements of all authorities having jurisdiction.

PART 2 – PRODUCTS

2.1 TREE PROTECTION

- A. Materials for tree protection shall be:
 - 1. Pressure treated southern yellow pine wood posts
 - 2. Spruce or fir wood rails
 - 3. Orange plastic construction safety fence
 - 4. Galvanized hardware

PART 3 - EXECUTION

3.1 SITE ENGINEERING /LAYOUT

- A. Prior to the start of clearing and excavation operations, lay out and stake the new paved areas, limits of cut and fill and work limit lines for the Landscape Architect's review.
- B. Promptly upon completion of layout work, and before any clearing or other construction work is begun, the Contractor shall arrange a conference on the site with the Landscape Architect to review the limits of work areas staked out. The limit of cut and fill shall be clearly marked to determine the extents of tree removal required.

3.2 TREE PROTECTION

- A. Prior to starting any construction work, erect tree protection in accordance with the Detail where shown and as directed by the Landscape Architect in the field.
- B. Within the limit of work, protect all plant materials to remain. No such plant materials shall be used as guys or other fastenings. No material storage, vehicle parking or access routes shall occur under the dripline of trees to remain except where work is specifically shown on the Drawings.
- C. The Contractor shall not cause any damage to trees to remain. If the limits of excavation defined by the Contract Documents require removal of roots of trees to remain, such roots shall be neatly cut after consulting with an Arborist and notifying the Architect.

3.3 CLEARING AND GRUBBING

- A. After the Landscape Architect has reviewed the limit of clearing, remove trees and shrubs as indicated on the Drawings and as required to construct the work of this project.
- B. Grubbing: Completely remove stumps and roots of vegetation indicated to be removed.

- C. All materials from clearing operations shall be removed from the site prior to or by the end of the clearing operations. On-site disposal will not be allowed.
- D. Fill holes, depressions caused by clearing and grubbing operations with fill material and placement conforming to Section 312000 – EARTH MOVING as specified for the proposed improvements. Place fill in horizontal layers, 6 inches in loose depth, and compact to the specified density.
- F. Without exception, any area cleared for any reason by the Contractor, inside or outside the Limit of Work Line and not otherwise developed shall be loamed and seeded at no additional cost to the Owner.
- G. Tree clearing shall include as many separate mobilizations as required by the Contractor's sequence of operations due to the phased nature of the project. A selective clearing operation shall be performed by the Contractor after rough grading has been completed, to remove trees, stumps and vegetation at the limits of cuts and fills as directed by the Landscape Architect in the field.

3.4 STRIPPING AND STOCKPILING TOPSOIL

- A. Prior to the start of General Excavation, strip all topsoil and subsoil from within areas to be re-graded keeping the topsoil completely separate throughout the stripping and stockpiling operation. Do not commence the stripping operation without a clear understanding of the existing soil depths, planting and site conditions to be preserved and limits of topsoil stockpile and stripped areas.
- B. All topsoil encountered during the stripping operations, regardless of depth, shall be removed and stockpiled on the site as shown on the Drawings or where directed by the Architect or removed from the site if the Contractor determines there is adequate topsoil to complete the work and after approval by the Architect. Areas having greater depths of topsoil than indicated on boring data sheets or reasonably anticipated shall be stripped of all such material and fill shall be used to bring such areas to the rough grade level. Stones over six inches and tree roots over two inches in any dimension shall be removed from loam before stockpiling. Stripped soil that can be classified as fill as defined in Section 31 20 00 – EARTH MOVING, shall be stockpiled for reuse in rough grading. This material shall be stripped separately from the topsoil. Topsoil and organic materials due to be stripped are as follows:
- C. The Contractor shall control the stripping operation so that the topsoil does not become contaminated with subsoil or other earth materials. The Contractor shall use machinery suitable for achieving this result.
- D. Subsoil: The material directly below the topsoil shall not be considered usable as Ordinary Fill as specified in Section 31 20 00 – EARTH MOVING or for topsoil. The only area where subsoil may be used is under areas with new landscape planting. Subsoil shall be stripped separately from the topsoil and from the underlying earth materials. Subsoil shall be stripped as follows:
 - 1. Building Structures, Roads, Parking Areas and other site improvements except lawn areas - remove completely.
 - 2. Future Lawn Areas - not necessary to remove in fill condition. However, subsoil shall be removed from adjacent proposed buildings, structures, site improvements, roads and parking areas a distance equal to the depth of fill plus three feet in the particular location, i.e. for a five foot fill, subsoil shall be removed a minimum of eight feet away from the adjacent site improvements.

- E. All excess subsoil encountered in earthwork operations shall be removed from the site and legally disposed of. Topsoil shall be stockpiled as described hereinabove.

3.5 BITUMINOUS CONCRETE

- A. Remove and legally dispose of all bituminous concrete paving indicated on the Drawings to be removed and all other paving required to be removed in order to construct the Project.
- B. Saw cut existing bituminous paving at all locations where pavement to be removed or pulverized meets existing pavement to remain and where new pavement meets existing pavement to remain. Sawcuts shall be made with sharp tools and blades to provide a clean, straight and vertical cut line. Use carbide or other type blade intended for that purpose.
- C. Reclaimed Base Course – Pulverize and Blend: In existing bituminous paved areas that will be paved with new bituminous concrete as part of the work of this project, the existing bituminous pavement shall be uniformly crushed, pulverized and blended with the underlying gravel base to a minimum depth of nine inches. This work shall conform to The Commonwealth of Massachusetts Department of Transportation, Standard Specifications for Highways and Bridges, latest edition Section 403 Reclaimed Base Course.
 - 1. All pulverized material shall pass the 3-inch sieve, and be free of all clay, loam, brick or deleterious material.
 - 2. Prior to pulverizing the existing pavement, the Contractor shall locate and protect existing utility structures and underground pipes, culverts, conduits and other appurtenances to remain. If the upper sections of utilities are removed to facilitate pulverizing the existing pavement, the remaining part of the structure designated to remain shall be immediately covered with a steel plate capable of withstanding a 36.5 ton truckload with impact.
 - 3. The Contractor shall submit to the Landscape Architect for approval a description of equipment and the process to be used for pulverizing and blending the existing pavement. The pulverizing operation shall be controlled in such a manner that the resultant material will be free from excessive fine material, with material passing the No. 200 sieve not to exceed 8% by weight.

3.6 ABOVE AND BELOW GRADE IMPROVEMENTS

- A. Remove and legally dispose of all existing above and below grade improvements necessary to allow construction of all work of this Contract including but not limited to footings, playground equipment, pipes, tanks, concrete slabs, castings, curbing, walls, fencing, signage and any and all other improvements inside or outside the contract limits except items indicated on the Site Preparation Plan to be preserved and protected or removed and salvaged. Remove walls and other obstructions to a depth of at least 2 feet below finished grades and as required to construct the subsurface improvements of this project.
- B. Abandonment, relocation, partial removal or complete removal of certain existing underground and above ground utilities including, but not limited to pipes, tanks, castings, conduits, electrical wiring and poles shall be performed as indicated on the Drawings.

3.7 SALVAGING MATERIALS

- A. The Landscape Drawings depict specific memorial artifacts to be salvaged and relocated in the new design. The Contractor shall review these items in person with the Landscape Architect prior to any site demolition in these areas. Items to be salvaged include:
 - 1. Community Board at Bishop
 - 2. Memorial Brick Pavers at Bishop
 - 3. Memorial Stone at Stratton

4. Memorial Brick Pavers at Stratton
5. Rubber Tires at Bishop
6. Buddy Benches (2) at Peirce
7. Play Equipment Steppers at Stratton
8. Gaga Pit at Stratton

B. Salvaged items shall be carefully removed, cleaned and stored in a protected area until the new site conditions are prepared for their reinstallation.

3.8 DISPOSAL OF WASTE MATERIALS

- A. Removal from Owner's property: Remove all waste materials from Owner's property in timely and responsible manner and legally dispose of off-site. Accumulation is not permitted. Maintain disposal routes clear, clean and free of debris. Dumping and / or burning of material on site will not be permitted.

3.9 CLEAN UP

- A. Keep pavements and areas adjacent to and leading from the site, clean and free of mud, dirt and debris.
- B. At completion of the work of this Section, remove materials generated by site clearing. Do not spill or disperse debris on the site. Leave the site in a safe and clean condition acceptable to the Architect.

END OF SECTION

SECTION 31 23 00
EXCAVATION, FILLING AND GRADING

PART 1 - GENERAL

1.01 General Requirements

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the owner or owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.

1.02 Work Included

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform Earthwork as shown on the Drawings and as specified herein.
 - 1. Excavating, filling, trenching and backfilling of all descriptions required for the construction of pavements, safety surfaces, equipment, site improvements, utilities, filling voids left by hardscape and plant removals, and all specialties. Provide all additional fill materials as required and specified herein.
 - 2. Pumping and/or bailing necessary to maintain excavated spaces free from water from any source whatsoever.
 - 3. Dust control.
 - 4. Provide graded materials, as specified, for fills, base courses and backfills as required.
 - 5. Rough grading.
 - 6. Perform all compaction of fill materials as hereinafter specified.
 - 7. Obtain all required permits, licenses and approvals of appropriate municipal and utility authorities prior to commencing work, pay all costs incurred therefrom.
 - 8. If subgrade is deemed unsuitable for placement of subbase material, backfill w/ processed gravel. Work under this Section shall include the excavation of 20 cubic yards of unsuitable material beyond the line and grades as shown on drawings, and as determined by the Landscape Architect. Such removals shall be measured by a Civil Engineer or Land Surveyor employed by the Contractor and verified by the Landscape Architect. No unsuitable material removals shall be credited to the Contractor without prior measurements and

verifications.

- B. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments of the City of Somerville and coordinate all work under this Section therewith.
- C. The following related items are included under the Sections listed below.
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishing
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 32 12 16 – Asphalt Paving
 - 5. Section 32 13 13 – Concrete
 - 6. Section 32 18 16.31 – Playground Protective Surfacing
 - 7. Section 32 90 00 – Planting
 - 8. Section 33 91 00 – Loam and Planting Preparation
 - 9. Section 33 40 00 – Storm Drainage and Utilities

1.03 Submittals

- A. Submit certified gradation test data for borrow materials a minimum of one week prior to delivery to the site.
- B. Provide 50-pound samples of each material to a qualified laboratory for moisture density testing a minimum of one week prior to delivery to site.
- C. Compaction test of subbase materials after installation and compaction and before surface material is installed.

1.04 Laws, Ordinances, Permits and

Fees The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- B. Obtain all required certificates of inspection for this work and deliver same to the Landscape Architect before request for acceptance and final payment for the work.
- C. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations of the City of Somerville and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.
- D. The Contractor shall provide a temporary sidewalk whenever a sidewalk is closed because of the construction. This temporary sidewalk must be at the same level as the existing closed sidewalk and it must be visually partitioned off from the street and

work area. The Contractor shall so conduct his operations as to interfere as little as possible with roads, driveways, alleys, sidewalks, or other nearby facility.

1.05 Definitions

- A. The following related items are included herein and shall mean:
1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Transportation, latest edition
 2. A.S.T.M. - American Society for Testing and Materials
 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
- B. "Excavation" consists of removal of material encountered to subgrade elevations indicated and disposal of materials removed.
- C. "Finished grades" as used herein shall mean the required final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas shall be given uniform slopes between points for which finished grades are indicated or between such points and existing established grades.
- D. "Base Course" as used herein is the placed and compacted material immediately below the finish grade material to the thickness indicated on the Drawings.
- E. "Subgrade" as used herein means the naturally occurring or placed and compacted material below the base course.
- F. "Trench Excavation" is defined as an excavation of any length where the width is less than twice the depth and where the distance between the pay lines does not exceed ten feet.
- G. "Open Excavation" is defined as all other excavation.
- H. "Unauthorized excavation" is defined as excavation beyond approved measurement lines.
- I. "Unsuitable materials" are soils containing organic matter, materials subject to attack from termites, materials subject to decomposition, soils too wet to be stabilized, frozen materials and existing materials that do not satisfy the product specification herein. Weak or soft material resulting from any of the Contractor's operations shall not be considered "unsuitable material".
- J. "Excess material" is any excavated material that is not needed for the construction of

project elements. The removal of excess material from the site shall be included in the Base Bid Contract.

- K. Rock excavation shall be defined as solid, continuous rock or concrete mass, unable to be removed without mechanical measures and larger than 1 cubic yard in size. All other rock shall be unclassified excavation included in the contract bid price.

1.06 Bench Marks and Engineering

- A. Lines and grade work in accordance with Drawings and Specifications shall be laid out by a registered Civil Engineer or registered Surveyor employed by the Contractor. The Contractor shall establish permanent bench marks, to which access can easily be had during the progress of the work. The Contractor shall maintain all established bounds and bench marks and replace, as directed, any which may be disturbed or destroyed. The selection of the registered Civil Engineer or Surveyor shall be approved by the Landscape Architect.
- B. The Contractor shall submit written confirmation of dimensions and elevations on the ground and report any discrepancies immediately to the Landscape Architect. Such confirmation shall bear the Engineer's registration stamp. Any discrepancies not reported prior to construction shall not be the basis of claims for extra compensation.
- C. The General Contractor shall not commence any excavation or construction work, until the Landscape Architect's verification has been received and approved by the Official.

1.07 Subsurface Information

- A. Refer to the Existing Conditions Base Plan for surveyed information. The Owner, the Landscape Architect and the Surveyor shall not be responsible for the interpretations or conclusions made by the Contractor based on this information. This Existing Conditions Base Plan is provided so that the Contractor can familiarize himself with the expected conditions when preparing his bid. If the Contractor encounters subsurface conditions considered to be different than those presented in the Contract Documents, the Contractor shall notify the Architect in accordance with the General Conditions.
- B. The Owner assumes no responsibility for the Contractor's failure to make his own site investigation and makes no warranty regarding the character of the soil or subsurface conditions which may be encountered during the performance of the work.

1.08 Finished Grades

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, site areas shall be given uniform slopes between points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.

1.09 Grades and Elevations

- A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make such adjustments in grades and alignment as are found necessary in order to avoid interference and to adapt the grading to other special conditions encountered.

1.10 Work in the Public Ways

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the City of Somerville, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary or other permits therefor. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

1.11 Disposition of Existing Utilities

- A. Active utilities existing on the site shall be carefully protected from damage and relocated or removed as required by the work. When an active utility line is exposed during construction, its location and elevation shall be plotted on the Record Drawings and both the Landscape Architect and the Utility Owner notified in writing.
- B. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped in accordance with procedures of relative utility company or agency. The location of such utilities shall be noted on the Record Drawings and reported in writing to the Landscape Architect.
- C. Active utility lines damaged in the course of construction operations shall be repaired or replaced as determined by the Landscape Architect without additional cost to the Owner.
- D. Notify the Owner at least three (3) days in advance of the proposed time for shutting down or interrupting utilities or services which may affect operation of adjoining properties. Unless otherwise authorized by the Owner, schedule such interruptions on weekends, holidays, or before or after Owner's normal working day. In no case shall any services or utilities be interrupted prior to notification and authorization by the Owner.

1.12 Protection

- A. All rules and regulations governing the respective utilities shall be observed in

executing all work under this Section. All work shall be executed in such a manner as to prevent any damage to existing streets, curbs, paving, service utility lines, structures and adjoining property. Monuments and bench marks shall be carefully maintained and, if disturbed or destroyed, replaced as directed.

- B. The Contractor shall perform the installation, maintenance and removal of all sheet piling, shoring and bracing required for the protection of all items of this Contract affected by the work of this Section.
- C. The Contractor shall furnish all facilities and materials necessary to prevent the earth at the bottom of excavation from becoming frozen or unsuitable to receive footing or other load bearing units.
- D. The work of this Section shall be performed in such a manner as to cause no interference with access by the Subcontractors or other Contractors to all portions of the site as is necessary for the normal conduct of their work.
- E. Protect all areas to remain undeveloped outside the Contract limit lines. Should these areas be damaged, the Contractor shall restore them to the satisfaction of the Landscape Architect and Owner at no additional cost to the owner. This includes the repairing and replacement of all damaged conditions such as plant materials and similar items.

1.13 Samples and Testing:

- A. All fill material and its placement shall be subject to quality control testing. Contractor will submit the name of a qualified laboratory to perform test on materials, for Approval by Landscape Architect. The Contractor will pay for all costs of testing. Test results and laboratory recommendations shall be available to the Landscape Architect. Submit one test for each material source proposed for use.
- B. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate source if required. The Landscape Architect will be sole and final judge of suitability of all material.
- C. The laboratory will determine maximum dry density and optimum water content in accordance with ASTM D1557, Method D and the in-place density in accordance with ASTM D1556.
- D. Sampling and testing material delivered to the site shall be performed to ensure material conforms to approved submittals. Materials in question may not be used, pending test results. Compaction tests shall be performed on placed fill materials. Materials that do not conform to the specified physical or performance requirements shall be removed and replaced with acceptable materials at the Contractor's expense.
- F. Cooperate with laboratory in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests.
- G. Gravel Borrow shall be laboratory tested for permeability prior to approval in accordance with ASTM D 2434 Permeability of Granular Soils (Constant Head).

PART 2 – PRODUCTS

2.01 Fill Materials

A. Ordinary Fill

1. All material to be placed where the Specifications or Drawings call for Ordinary Fill shall be well-graded, natural, inorganic mineral soil approved by the Landscape Architect and shall have the physical characteristics of soils designated as group A-1, A-2-4, or A-3 under AASHTO-M145.
2. Ordinary Fill shall be free of organic or other weak or compressible materials, of highly plastic clays, of all materials subject to decay, decomposition or dissolution, of cinders or other materials which will corrode piping or other metal, of frozen materials, and of stones larger than 6 inches.
3. Ordinary Fill shall be of such nature and character that it can be spread and compacted to the specified density in a reasonable length of time.
4. Soil for use as Ordinary Fill shall contain no more than 35 percent by weight passing the No. 200 sieve.
5. It shall have a maximum dry density of one hundred pounds per cubic foot.

B. Gravel Borrow

1. All paving shall be installed over compacted graded gravel; all footings and all voids left from equipment removal shall be filled with compacted graded gravel.
2. All gravel fill shall meet the specifications of M1.03.1 "Processed Gravel for Subbase" in S.S.H.B. Submit sample and test results for approval.

Sieve Size	Percent Finer by Weight
2-inch	100
1/2-inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-8

C. Crushed Stone (Drainage Stone):

1. Drainage stone, or crushed stone, shall be 3/4" and (except where other size indicated on the Drawings) clean, angular stone of a hardness suitable for use in structural applications. 3/4" stone shall comply with M2.01.4 and 1/2" shall comply with M2.01.5 in S.S.H.B.

Percent Passing by Weight		
Sieve Size	3/4-inch Stone	1/2-inch Stone
1-inch	100	---
3/4-inch	90-100	---
5/8-inch	---	100
1/2-inch	10-50	85-100
3/8-inch	0-20	15-45
No. 4	0-5	0-15
No. 8	---	0-5

- D. Base Drainage Stone (for Poured in Place Rubber) shall consist of clean, hard, crushed aggregate that is angular and durable derived from a stone quarry free of all deleterious materials. Gradation of sample provided for testing and approval shall be within the following range:

<u>U.S. Sieve No.</u>	<u>Percent Passing By Weight</u>
2"	100
1-1/2"	90 – 100
1"	75 - 100

s"	65 – 95
S"	55 – 85
$\frac{3}{8}$ "	40 – 75
j"	25 – 65
No. 4	15 – 60
No. 8	0 – 40
No. 16	0 – 20
No. 30	0 – 7
No. 50/60	0 – 5
No. 100	0 – 3
No. 200	0 – 2

Crushed Stone Base for PIP Rubber shall be crushed so it compacts to a 95% Standard Proctor Compaction.

- a. To ensure proper drainage (When stone is saturated and compacted to 95% Proctor):
 - 1) Permeability > 50 in/hr (3.5×10^{-2} cm/sec)
 - 2) Porosity of stone > 25%
 - 3) Laboratory test: ASTM D 2434 Permeability of Granular Soils (Constant Head)
 - 4) Field test: ASTM D 3855, Method for Infiltration Rate of Soils Using Double-Ring Infiltrometer
 - 5) Material shall be tested and results shall be reviewed by a City of Somerville Engineer for compliance.
- b. Soft aggregate materials such as sedimentary rock sources are not acceptable. Questionable materials shall be evaluated using a sulfate soundness test (ASTM C-88) and LA Abrasion Test (ASTM C-131) and shall be within the following criteria:

Test Method	Criteria
Sulfate Soundness (ASTM C-88)	Not to exceed 10% loss
LA Abrasion (ASTM C-131)	Not to exceed 20% loss

E. Filter Fabric

1. Filter Fabric shall consist of Mirafi 140 N or approved equivalent.
2. Filter Fabric used, as a drainage medium shall consist of a non-woven fabric made from polypropylene or polyethylene filaments or yarns. The fabric shall be inert to organic chemicals commonly encountered in the soil. The fabric shall conform to the following recommended property tests:

Property	Unit	Test Method	Minimum Value
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Weight	oz/sy	ASTM D-3776-84	4.5
Grab Strength	lbs	ASTM D-4632-86	120
Grab Elongation	percent	ASTM D-4632-86	55
Trapezoid Tear Strength	lbs	ASTM D-4533-85	50
Mullen Burst Strength	psi	ASTM D-3786-80	210
Puncture Strength	lbs	ASTM D-4833-88	70
Apparent Opening Size (AOS)	U.S. std. Size Sieve	ASTM D-4751-87	70

2. USES OF MATERIALS

Fill materials listed above shall be utilized as follows and as otherwise indicated on the Drawings, specified or directed.

B. Gravel Borrow:

1. Directly below exterior surface treatments consisting of concrete surfaces as shown on the Drawings.
2. Elsewhere as shown on the Drawings or specified herein.

C. Ordinary Fill:

1. For general site fill where Crushed Stone or Gravel Borrow are not specified.

D. Crushed Stone:

1. For a minimum 3-inch thickness over all concrete footing bearing surfaces.
2. Elsewhere as shown on the Drawings or specified herein.

E. Sand:

1. As shown on the drawings or specified herein.

F. Filter Fabric:

1. Place Filter Fabric around the $\frac{3}{4}$ " Crushed Stone surrounding drain pipes
2. Elsewhere as shown on the Drawings or specified herein.

G. Dense-Graded Crushed Stone:

1. As shown on the Drawings or specified herein.

H. Base Drainage Stone for PIP Rubber:

1. Directly below exterior surface treatments consisting of poured in place rubber surfaces as shown on the Drawings or specified herein.

PART 3 - EXECUTION

3.01 Grades and Elevations

- A. Establish the lines and grades in conformity with the Drawings. Establish and maintain suitable stakes or batters at points where spot elevations are given on the Drawings and at any other points to be graded as directed by the Landscape Architect. Maintain sufficient reference points at all times during construction to properly perform the Contract installation.

3.02 Excavation

- A. Prior to any excavation, contact DIG-SAFE at 1-888-344-7233 to identify subsurface utilities within the work area.
- B. General
 - 1. Excavate all material to the elevations, dimensions and form as shown on the Drawings and as specified for the construction of site improvements and other structures necessary for the completion of the utilities and site work. All unsuitable materials within the indicated and specified limits shall be excavated and removed at no additional cost to the contract as specified in 1.02 (B-8) of this section. Any quantities involving an extra or other adjustment of the Contract Price shall be subject to measurement verification and approval by the Landscape Architect prior to the excavation and removal of such materials. Unsuitable materials shall include the following:
 - a. Utility structures, building foundations and other man-made structures.
 - b. Peat, organic silt and other organic materials subject to decomposition, consolidation or decay.
 - c. Miscellaneous fill including cinders, ash, glass, wood, and metal.
 - 2. In general, the Contractor shall be permitted to use machine excavation except for the final six (6) inches under footings, foundations, utility lines and structure, which shall be hand work.
 - 3. If any part of the excavation is carried through error beyond the depth and dimensions indicated on the Drawings or specified herein, or if the foundation soils are disturbed by dewatering or other construction operation, the Contractor shall, at his own expense, refill with structural fill compacted to ninety-five (95) percent of the maximum dry density at optimum moisture content.
 - 4. When excavation has reached the prescribed depth, the Landscape Architect shall be notified and will make an inspection of the condition and approve the placing of fill material.

EXCAVATION FILLING AND GRADING

The Contractor shall obtain from the proper authorities locations of all utilities within the scope of this work so that there will be no damage done to such utilities. Neither the Owner nor the Landscape Architect will be responsible for any such damage, and the Contractor shall restore any structure or utility so damaged without additional compensation. Attention is called to that fact that there are electric lines, and other utilities in certain locations within and adjacent to the sites. Written notifications to the appropriate utility agencies shall be made at least ten (10) days prior to the commencement of any work.

Wherever culverts, sewers, drains, manholes, catch basins, catch basin connections, water mains, valve chambers, utility tunnels, gas pipes, electric and telephone conduits, house service connections of any other underground constructions are encountered in excavating for utilities or any other site work, they shall be protected and firmly supported by the Contractor, at his own expense, until the trench is backfilled and the existing structures are made secure. Injury to any such structures caused by or resulting from the Contractor's operations shall be repaired at the Contractor's expense. The authority having charge of any particular underground structure shall be notified promptly of damage to its structure.

Excess material - Suitable excavation material which is allowable for fill and backfill shall be separately stockpiled as directed by the Landscape Architect. All surplus fill other than that required to complete the intent of the Contract shall become the property of the Contractor and shall be legally disposed of off the property. All excavated materials which, in the opinion of the Landscape Architect are not suitable for fill and backfill shall be removed and legally disposed of off the property.

Any unsanitary conditions encountered, such as broken sewer mains or uncovered garbage, shall be corrected or removed entirely as directed by the Landscape Architect.

C. Excavation for Site Improvements.

1. Excavate to the lines and grades shown on the Drawings and as specified to obtain the subgrades for the site improvements.
2. Trenching for all water and drain lines shall comply with the standards in S.S.H.B., specifically Section 150.64.
3. Existing service and utilities encountered shall be immediately repaired, protected and maintained in use until relocation of same has been completed or to be cut and capped where directed or be prepared for connection when so required.

3.03 Subgrade Preparation and Protection

A. General Requirements

1. All subgrade areas shall be made ready for fill by removal of all organic material, unsuitable soils and deleterious materials to firm natural ground as directed by the Landscape Architect.
2. Scarify, spot-fill, or otherwise treat the surface of areas to receive fill as necessary to remove holes, depressions, ruts, hummocks, or other uneven features.

EXCAVATION FILLING AND GRADING

B. Proof Rolling Subgrades

1. Prior to placement of fill, or bottom filter fabric where shown on drawings, proof roll natural ground by making a minimum of two passes with approved compaction equipment. Proof rolling may be waived by the Landscape Architect where excessively wet or saturated subgrade conditions are encountered.

3.04 Protection

- A. Protect open excavations with fencing, warning lights and other suitable safeguards. No open excavation shall be left without proper barriers and other devices necessary for public safety.
- B. Comply with local safety regulations or, in the absence thereof, with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc. and O.S.H.A.
- C. Frost Protection - Make no excavation to the full depth indicated when freezing temperature may be expected unless the footing or slabs can be poured immediately after the excavation has been completed. Protect the bottoms as excavated from frost, if placing of concrete is delayed, with straw, tarpaulins or temporary heat until footings or slabs poured and backfill is placed.
- D. Any ditching required to keep the site free from water during construction is the responsibility of the Contractor.

3.05 Fill and Compaction

A. Compaction Equipment and Density Requirements

1. Compaction equipment, unless otherwise specified, shall consist of heavy vibratory rollers, such as a Raygo 400 or other compaction equipment approved by the Landscape Architect. Equipment shall make a minimum of four (4) passes to achieve compaction as specified; to provide an evenly dense and compacted thickness throughout. All ruts shall be filled, the surface even and compacted to the density called for. The Landscape Architect retains the right to disapprove the use of any equipment that does not meet the above Specifications or perform the work as intended. Any modifications of equipment or method must be approved by the Landscape Architect.
2. Fill material under pavements and structures shall be compacted to ninety-five (95) percent of maximum density(s) determined by A.S.T.M. Test Designation D-1557, Method D or A.S.T.M. D-1556. For fill to 30" depth within seeded and planted areas compact portion of fill for planting to at least 80 percent but not more than 90 percent of the material's maximum dry Proctor density

- a. Fill material under synthetic turf shall be compacted to. 92% min - 95% max of maximum density(s) determined by A.S.T.M. Test Designation D- 1557, Method D or A.S.T.M. D-1556

3. Refer to 1.13 in this Section for testing requirements.

B. Placing Fills and Compacting

1. Notify the Landscape Architect when excavation is ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Landscape Architect.
2. Fill material shall be placed in horizontal layers not exceeding six (6) inches. Each layer shall be compacted to the percentage of maximum dry density specified for the particular type of fill and at a water content equal to optimum dry density and optimum water content shall be as specified herein.
3. Where water content of the fill must be adjusted to meet this Specification, the fill shall be thoroughly disked to insure uniform distribution of any water added.
4. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when materials or layers below it are frozen.
5. In confined areas adjacent to footings and foundation walls and in utility trenches, the fill shall be compacted with hand-operated vibration tampers. The maximum lift thickness shall be four (4) inches. The degree of compaction attained shall be equivalent to that attained in the adjacent open areas where heavy rolling equipment is used. Any areas which subsequently settle shall be refilled to true subgrade and properly compacted.

3.06 Grading

- A. Do all grading required for the work including shaping, trimming, rolling and finishing of the surface of the subgrades for all surfaces. All ruts shall be eliminated. Grading for subgrades for paved areas and synthetic turf shall be finished at the required depth below and parallel to the proposed surface within 1/4" in 10'-0" tolerance.
- B. If, during the progress of rough grading work, any water pipe, sewer, conduit, drain, or other construction is damaged as a result of operations under this Contract, the Contractor shall repair all such damage at no additional cost to the Owner and restore work to its original condition.
- C. Do all other cutting, filling and rough grading to the lines and grades indicated on the Drawings. Grade evenly to the finished grades shown on the Drawings. No stone larger than 2" in largest dimension shall be placed in upper 6" of fill.
- D. Complete grading operations after site improvements are constructed, and all materials, rubbish and debris removed from the site. Leave subgrade for planting clean at required grades. Provide sufficient grade staking to witness correct lines and grades, as determined by the Landscape Architect.
- F. Where streets or sidewalks within or outside the limit of Contract lines have been

excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all material necessary to bring finish surfaces level with the existing adjacent surfaces. All work shall be installed to match the existing conditions in accordance with the governing authority. Notify the proper authorities prior to restoring surfaces outside the limit of Contract line.

- G. Fine grading of the gravel borrow base and top stone for the synthetic turf field shall be performed with laser-guided grading equipment required to achieve the tolerances specified herein.
- H. Tolerances

<u>Area</u>	<u>Max Grading Tolerance +/-</u>
1. Subgrade in landscaped areas prior to placement of loam	1/2"
2. Gravel base under pavement	1/4" in 10'
2. Top Stone under synthetic turf	3/16" in 10'

END OF SECTION

**SECTION 32 12 16
ASPHALT PAVING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions, Division 0 and Division 1, General Requirements, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install ASPHALT PAVING, as indicated on the Contract Documents and as specified herein.
- B. The work of this Section includes, but is not limited to the following:
 - 1. Gravel base course construction
 - 2. Hot mix asphalt paving
 - 3. Patching and resurfacing disturbed paved areas

1.3 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:
 - 1. Section 31 23 00 – Excavation Filling and Grading
 - 2. Section 32 13 13 – Concrete
 - 3. Section 32 90 00 – Planting
 - 4. Section 32 91 00 – Loam and Planting Preparation
 - 5. Section 32 92 00 – Turf and Grasses
 - 6. Section 33 40 00 – Storm Drainage Utilities

1.4 SUBMITTALS

- A. At least 30 days prior to intended use, submit material certificates signed by material producer and Contractor indicating that products comply with requirements. Provide master mix formula for all bituminous concrete specified in this Section, listing quantities and pertinent ingredient properties for review and approval. Submit product data for traffic marking paint.
- B. Submit aggregate samples for review and approval.
- C. Do not order materials until Architect's approval of mix formula has been obtained. Delivered materials shall closely match the approved samples.
- D. Submit product data for traffic marking paint.

1.5 PROJECT CONDITIONS

- A. Weather: Perform work only when existing and forecasted weather conditions are within the limits established by referenced standards. Perform work only when ambient temperature is forecasted to be at least 50-degrees Fahrenheit and when temperatures have not been below

35-degrees Fahrenheit for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess amount of moisture or is in a frozen state.

- B. Asphalt paving shall not be applied until the finished compacted gravel base has been tested and approved. A delay in paving after the gravel base is tested and approved may require recompaction and testing at no additional cost to the Owner.
- C. Construction methods, transportation and delivery of mixtures, spreading, finishing, compaction joints, etc. shall conform to Section 460 of the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges unless otherwise specified herein.
- D. Substrates: Proceed with work only when substrate construction and penetrating work is complete and base is dry.
- E. Traffic Control: Maintain access for vehicular and pedestrian traffic as required and for other construction activities.
- F. Grade Control: Establish and maintain required lines and elevations.

1.6 REGULATORY REQUIREMENTS

- A. Strictly comply with applicable codes, regulations and requirements of authorities having jurisdiction.

1.7 QUALITY ASSURANCE

- A. Bituminous concrete shall be prepared, mixed, transported, placed, compacted and finished in accordance with the requirements set forth in the latest edition of the "Standard Specifications for Highways and Bridges" (hereinafter referred to as "SSHB"), as published by the Massachusetts Department of Transportation.

1.8 TESTING

- A. During the placing and rolling operation, repeated checks shall be made to ascertain the correct rate of application to provide the required compacted thickness
- B. If the average thickness is deficient from the specified thickness by one quarter (1/4) inch or more, the extent of the deficient area shall be corrected at the Contractor's expense.
- C. Upon completion of testing, the Contractor shall properly fill all test holes by compacting a fine aggregate bituminous concrete for the full depth of the core. The finished surface shall be smooth.

1.9 COORDINATION

- A. This Contractor shall coordinate with all other trades especially grading, curb installation, electrical and plumbing contractors, through the General Contractor in order to prevent covering up unfinished or uninspected work and loss of time or labor by mis-scheduling and to assure the steady progress of all work of the Contract. Any rework shall be done at no cost to the Owner.

1.10 LAYOUT AND GRADES

- A. A Registered Land Surveyor or Registered Professional Engineer employed by the Contractor shall lay out all lines and grade work in accordance with the Contract Documents.

1.11 DISTURBING EXISTING PAVEMENT DURING CONSTRUCTION

- A. Existing paved areas shall be protected from damage by construction activities to the extent possible. Where sections of the finished paved areas have to be removed, the edges shall be saw cut in all cases and patched.
- B. Existing finished paved areas that require extensive cutting and patching or have become damaged and cannot be satisfactorily repaired by cutting and patching shall be resurfaced. These resurfaced areas shall be large enough to be applied by paving machines. Shape of these resurfaced areas shall be near and in rectangular patterns or shall conform to the shape or edges of other adjacent surface improvements. Edges of resurfaced areas shall be saw cut and existing pavements shall be removed from a distance of two feet into areas to be resurfaced, so that new pavement can neatly blend into existing pavement showing no joints or imperfections. If the gravel base course has been disturbed, the Contractor shall remove the disturbed material, repair the existing gravel base and apply a new binder course as specified herein.
- C. All paving beyond the project's property line shall be in accordance with the requirements of the authority having jurisdiction. Provide traffic control for any work within the Town's Right-of-Way.

PART 2 - PRODUCTS

2.1 GRAVEL BASE COURSE

- A. Subgrade preparation and gravel base course shall be furnished and installed as specified under 31 23 00 EXCAVATION FILLING AND GRADING. Starting Asphalt Paving work specified herein shall constitute acceptance of the base course conditions. Any defects in work resulting from such conditions shall be corrected under this Section 31 12 16 Asphalt Paving, at no additional cost to the Owner.

2.2 ASPHALT PAVING MATERIALS AND PRODUCTS

- A. Coarse Aggregates: Provide clean, sound, angular crushed stone, crushed gravel, complying with ASTM D 692-88.
 - 1. Use of Recycled Asphalt Pavement (RAP) in the binder course and for asphalt driveways, parking lots and walkways shall be limited to a maximum of 20% in the binder course and 10% in the top course provided that the end product is in conformance with the designated job-mix formula. For any bituminous mixture containing RAP, the Contractor shall submit in addition to the Job-Mix formula, the amount and type of asphalt modifier to be added to the mixture to restore the asphalt properties of the RAP to a level that is consistent with the requirements for new asphalt.
- B. Fine Aggregate: Provide sharp-edged natural sand or sand prepared from stone, gravel or combination thereof, complying with ASTM D 1073.
- C. Bituminous material for tack coat shall be one of the following:
 - 1. Cut-back asphalt (rapid curing type) conforming to AASHTO M81, Grade RC-70 or
 - 2. Emulsified asphalt rapid-setting type conforming to AASHTO M140, Grade RS-1

- D. Bitumen asphalt cement for the mixture shall conform to SSHB M3.01.0 and AASHTO M 226, Table 2 with the additional requirement of Ductility at 60 degrees Fahrenheit.
- E. Bituminous crack sealer shall be a hot-applied bituminous sealer conforming to Fed. Spec. SS-S-1401.

2.3 ASPHALT PAVING MIXES

- A. Provide Class I Bituminous Concrete Pavement, Type I-1 in compliance with Section 460, Paragraph 460.40, SSHB and Article 2.2 ASPHALT PAVING MATERIALS AND PRODUCTS.
 - 1. Binder Course and Top Course shall conform with the Job-Mix Formula given in Section M, paragraph M3.11.03, SSHB
 - 2. The Binder Course shall consist of one lift of Binder Course asphalt paving to thickness as shown on the Contract Documents. RAP content shall not exceed 20%. The aggregate for the binder course shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
1"	100
3/4"	80 – 100
1/2"	55 - 75
#4	28 – 50
#8	20 - 38
#30	8 – 22
#50	5 - 15
#200	0 - 5
Bitumen % of mix	4.5 - 5.5

- 3. The Top Course for driveways, parking lots and walkways shall consist of one lift of Top Course asphalt paving to thickness as shown on the Contract Documents. RAP content shall not exceed 10%. The surface tolerance after completion shall be 3/16 inch when measured in any direction with a 10 ft. straightedge. The aggregate for the top course shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
5/8"	100
1/2"	95 – 100
3/8"	80 - 100
#4	50 - 76
#8	37 - 54
#30	17 - 29
#50	10 - 21
#200	2 - 7
Bitumen % of mix	5.5 – 7.0

PART 3 - EXECUTION

3.1 GRAVEL BASE COURSE

- A. Subgrade preparation and gravel base course construction shall be performed in accordance with 31 23 00 EXCAVATION FILLING AND GRADING to meet the grades indicated on the Drawings and obtain a foundation of uniform bearing surface.

3.2 INSTALLATION OF ASPHALT PAVING

- A. Preinstallation examination required: The Installer of asphalt paving shall examine the sub base and all related work, and the conditions under which this work is to be performed and notify the Contractor in writing of all deficiencies and conditions detrimental to the proper completion of their work. Beginning work means Installer accepts substrates, previous work, and conditions.
- B. Reference Standards: Install asphalt concrete in strict compliance with Sections 460.60 through 460.68 of the State Standard Specifications, except where more restrictive requirements are specified.
- C. Subbase Inspection: Do necessary grading in addition to that specified under Section 31 20 00 Earth Moving to bring sub-grade to required grades and sections for bituminous pavement base course construction. Tamp traces of trenches. Remove spongy and otherwise unsuitable material and replace with approved material. Loosen exceptionally hard spots and recompact. Take every precaution to obtain a foundation of uniform bearing strengths. Any defects in this work shall be corrected under this Section at no additional cost to the Owner.
- D. Gravel Base Course Preparation: shall consist of approved gravel fill and placed on approved subgrade to the depth indicated and as specified under Section 31 23 00 EXCAVATION FILLING AND GRADING. The surface of the gravel base shall be shaped to the cross section of the pavement. The start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied.
 - 1. The gradation shall conform to Gravel Borrow as specified in Section 31 23 00 EXCAVATION FILLING AND GRADING. Gradation shall be determined by a mechanical wet sieve analysis and in accordance with ASTM D-422.
 - 2. The gravel shall be spread in layers from self-spreading vehicles or with power graders of approved types, or by hand methods upon the prepared subgrade. The gravel shall be compacted to not less than 95-percent of the maximum dry density of the material as determined by the Method of Test for ASTM Designation D - 1557, Method D. Grading and compaction shall continue until the surface is even and true to the proposed lines and grades within a tolerance of 3/8-inch above or below the required cross sectional elevations and to a maximum irregularity not exceeding 3/8-inch under a ten foot line longitudinally. Any specific area which after being rolled, does not form a satisfactory, solid foundation shall be removed, replaced and recompact. The gravel shall be spread and compacted in layers not exceeding 6-inches in compacted thickness. The Contractor shall furnish, set and maintain all line and grade stakes necessary to guide the automated grade control equipment.
 - 3. Contractor shall maintain the gravel base course in an acceptable condition, protected from traffic, erosion and other elements until the asphalt paving is placed.
 - 4. After the subgrade and /or existing pavement surfaces have been prepared as specified herein, the Contractor shall check all frames, covers, grates, water valve boxes and all miscellaneous castings that are located in the proposed pavement area to insure that all such items have been accurately positioned and set to the proper slope and elevation. All covers and grates shall be set flush with the required finished pavement surface. No depressions or mounds will be permitted in the pavement to accommodate inaccuracies in the setting of these appurtenances.
 - 5. For reclaimed base course requirements refer to Section 31 10 00 – Site Clearing and Preparation.

- E. Tack Coat: Tack coat shall be applied to previously paved, hardened surfaces. Apply uniformly by mechanical means at a rate of 0.05 gal/s.y. after thoroughly cleaning such surfaces of all foreign matter and loose material. Surfaces shall be dry before the tack coat is placed. The tack coat shall be applied immediately prior to laying the new pavement.
- F. Placing Mix: Paving shall be laid in two courses except as noted on the Drawings. The thickness of each course shall be as shown on the Drawings and measured in place after compaction. The first course shall be the Binder Course and the second course shall be Top Course as defined in "Table A" of Section M3.11.03 "Job-Mix Formula" of the SSHB.
 - 1. Any unsatisfactory irregularities or defects remaining after the final compaction shall be corrected by removing and replacing with new material as specified, to form a true and even surface. All minor surface projections, joints and minor honeycombed surfaces shall be ironed out smoothly to grade, as directed.
 - 2. No vehicular traffic or loads shall be permitted on the newly completed pavement until stability has been attained and the material has cooled sufficiently to prevent distortion of loss of fines.
- G. Rolling: Begin rolling mixture when asphalt concrete can bear weight of roller without excessive displacement. Roll at least three times and provide a smooth, compact, uniform surface free of roller marks. After first rolling repair displaced area as needed with additional hot material. Roll at least two additional times to thoroughly compact concrete to maximum density and to remove roller marks.
- H. Tolerances: The finished surface of each hot-mixed asphalt course shall be tested for smoothness using a 10-foot straight edge applied parallel with and at right angles to the center line of the paved area. Surfaces exceeding the following tolerances within the 10-feet will not be accepted.

Binder Course: 1/4-inch	Top Course: 3/16-inch
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3.3 PATCHING EXISTING ASPHALT PAVEMENT

- A. In areas on site where new pavement abuts existing pavement and/or where existing pavement requires patching due to removal of existing pavement for installation of work under this Contract, patching of existing pavement shall be as follows:
 - 1. Sawcut the existing edge of pavement in a straight line at a 90-degree angle to the vertical in such a manner that all existing loose or cracked areas of pavement are removed.
 - 2. Edges of existing pavement shall be painted with a thin coat of bitumen (RS-1) immediately before placing new pavement.
 - 3. Asphalt shall be installed as specified herein. Smooth transition surfaces shall be provided where new pavement abuts existing paved surfaces.
 - 4. Joints shall be sealed and sanded immediately after new pavement installation.
- B. All asphalt patching work within public right-of-ways shall be completed in accordance with the requirements of the authority having jurisdiction.
 - 1. Provide traffic control for work within the public right-of-way.
 - 2. All road surfaces shall be cut by an approved mechanical means before any excavation is started to insure against unnecessary damage to pavement.

3. Excavation shall be completed in a safe and workmanlike manner and is to create a minimum amount of obstruction to pedestrian and or vehicular traffic.
4. Gravel Borrow shall be used and placed on six inch layers and compacted to 95% of the maximum dry density by mechanical means.

5. Resurfacing:

- a. The work to be completed hereunder shall include the replacement of all existing bituminous pavements disturbed by the work. This shall include roadways, sidewalks, berms, driveways, parking lots and other paved areas encountered in the work.

Resurfacing will not be strictly limited to those areas disturbed, when in the judgment of the Architect an expansion of the work is necessary for proper restoration and to those areas specifically shown on the Drawings.

- b. All work shall conform the requirements of the Massachusetts Highway Department SSHB, latest edition. Specific gradations of mix will be as directed by the Town Engineer or Architect to suit the use intended.
- c. All cut joints at existing and new top pavement surfaces shall be sealed with bitumen and sand. This includes roadways, sidewalks, driveways, and all other pavements.

3.4 PAVEMENT MARKINGS

- A. Install painted pavement markings, as indicated on the Drawings. Clean surface to totally eliminate all loose material and dust. Apply paint in strict compliance with manufacturer's instructions and recommendations. Allow for proper curing of substrates before application of paints. Apply number of coats and dry film thickness as recommended by paint manufacturer. Apply paint with mechanical methods and templates to ensure uniform, straight lines and even line widths.

1. Stenciled pavement markings shall be installed on pavements as shown on the plans.

- b. Apply per paint manufacturer's recommendations.

3.5 CLEANING, REPAIR AND PROTECTION

- A. Three days after rolling, the finished pavement shall be tested. Any section that shows ponding, indentation, rutting or picking up shall be resurfaced at the Contractor's expense.
- B. Provide temporary protection to ensure work is completed without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protection and clean as necessary immediately before final acceptance review.

3.6 GUARANTEE

- A. The Contractor shall guarantee all pavement installations, including materials and workmanship, for a period of one year from the date of acceptance. The Contractor shall make interim repairs as necessary to maintain all paved areas in good, usable conditions.

END OF SECTION

**SECTION 32 13 13
CONCRETE**

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The conditions of the Contract, including Division 00 and Division 01, apply to the work under this Section.
- B. The Contractor shall prior to any removal of surplus fill, excavated material, or debris from the site, furnish written evidence satisfactory to the owner or owner's representative that he has an approved dumping location for debris and/or spoil from his/her excavation activities.

1.2 WORK INCLUDED

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install reinforced concrete pavement and stairs as indicated on the Drawings and as specified herein.
- B. Examine all other Sections of the Specifications and all Drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and all departments within jurisdiction and coordinate all work under this Section, including but not limited to:
 - 1. Footings for site improvements, playground equipment footings
 - 2. Concrete pad
 - 3. Concrete walkways
 - 3. Concrete curbing
- C. The following related items are included under the Sections listed below.
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 12 16 – Asphalt Paving
 - 6. Section 32 16 00 - Curbing
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 90 00 – Planting
 - 9. Section 32 91 00 – Loam and Planting Preparation
 - 10. Section 32 92 00 – Turf and Grasses
 - 11. Section 33 40 00 – Storm Drainage Utilities

1.3 SUBMITTALS

- A. Submit manufacturer's product data for the following:
 - 1. Preformed joint filler
 - 2. Sealants
 - 3. Concrete mix designs for footings and paving

- B. Mock ups: Samples shall not be constructed in an area of proposed finish work. Samples shall be constructed within the vicinity of the proposed finish work to facilitate comparisons during construction. The samples shall demonstrate the typical installation of concrete, including score lines, expansion joint and sealant, curing and finishing material, surface texture, and edge treatment. The accepted sample, upon approval, shall be maintained as the minimum standard of quality for approval of all new concrete pavement work required for the project. If the original sample panel is not approved, the Contractor shall provide additional sample panels, as required, at no additional cost to the Owner until an approved mockup sample is obtained. Unacceptable sample panels shall immediately be removed from the site.

1. Construct 4 foot x 4 foot sample panels of finished 4-inch thick concrete pavement, for approval, at least 15 days prior to final concrete paving work.

1.4 LAWS, ORDINANCES, PERMITS AND FEES

The Contractor shall:

- A. Give necessary notices, obtain all permits and pay all governmental taxes, fees and other costs in connection with this work, file all necessary plans, prepare documents and obtain all necessary approvals.
- B. Obtain all required certificates of inspection for this work and deliver same to the Architect before request for acceptance and final payment for the work.
- C. All concrete walks shall conform to the applicable regulations of the Massachusetts Architectural Access Board and the Americans with Disabilities Act.
- D. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations in the Town of Andover and the Commonwealth of Massachusetts, whether or not shown on the Drawings and/or specified.

1.5 DEFINITIONS

- A. The following related items are included herein and shall mean:
 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Transportation, latest edition
 2. A.S.T.M. - American Society for Testing and Materials
 3. A.A.S.H.T.O. - American Association of State Highway and Transportation Officials
 4. ACI – American Concrete Institute

1.6 SUBSURFACE INFORMATION

- A. The Owner assumes no responsibility for the Contractor's failure to make his own site investigation and makes no representation regarding the character of the soil or subsurface conditions which may be encountered during the performance of the work.

1.7 FINISHED GRADES

- A. The words "finished grades" as used herein mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, site areas shall be given uniform slopes between

points, for which finished grades are shown, or between such points and existing grade except that vertical curves or roundings shall be provided at abrupt changes in slope.

1.8 GRADES AND ELEVATIONS

- A. The Drawings indicate, in general, the alignment and finished grade elevations. The Landscape Architect, however, may make adjustments in grades and alignment as are found necessary to avoid interference and to adapt the grading to special conditions encountered.

1.9 WORK IN THE PUBLIC WAYS

- A. Notify the appropriate municipal officials at least seven calendar days in advance of commencing any work in the public ways to obtain all required permission to perform this work. Perform all work in the public ways in a manner required by the municipal authorities.
- B. Should there be any conflict between requirements specified in the Contract Documents and those of the municipality, the municipal requirements shall govern.
- C. Do not close or obstruct any streets or sidewalks unless and until they have been discontinued by the appropriate municipal authority or unless and until he shall have first secured all necessary or other permits therefor. No materials whatsoever shall be placed or stored in the streets. Conduct all operations to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks, or other facilities near enough to the work to be affected thereby.

1.10 QUALITY ASSURANCES

- A. Unless otherwise specified, work and materials for construction of the reinforced Portland cement concrete paving shall conform to referenced ACI specifications including, but not limited to 301, 309R, 310, 316R, and applicable portions MassDOT Specifications Section 476 Cement Concrete Pavement. In the event of a discrepancy between these specifications and referenced standards, the most restrictive shall apply.
- B. Paving work and base course installation shall be done only after excavation and construction work which might damage them have been completed. Damage caused during construction shall be repaired before acceptance.
- D. Existing paving areas shall, if damaged or removed during course of this project, be repaired or replaced under this Section. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work installed under this Contract.
- E. Pavement, base, or subbase shall not be placed on a muddy or frozen subgrade.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE

- A. Base course shall be specified, provided, installed and paid for under 31 23 00 Excavation Filling and Grading Specification Section.

2.2 FORM MATERIALS

- A. Unless otherwise indicated, construct form work for concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight,

smooth, exposed surfaces. Furnish in largest practical sizes to minimize number of joints and to conform to the joint system shown on Drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

- B. Controlled permeability formliner shall be a two-layer non-woven polypropylene fabric. Formliner shall be Formtex CPF Liner as manufactured by Fibertex Nonwovens, or approved equal.
- C. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

2.3 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 60.
- B. Welded Wire Fabric (WWF): ASTM A185, welded steel wire fabric. Fabric reinforcement shall be furnished in flat sheets.
 - 1. Provide 6 inches x 6 inches W1.4 x W1.4 WWM for 4 inch thick concrete pavement.
 - 2. Provided 6 inches x 6 inches W2.9 x W2.9 WWM for 6 inch thick concrete pavement.
 - 3. Welded wire fabric support chairs shall be plastic supports that flex during concrete pours and gradually restore to original shape. Support chairs shall be Mesh-Ups distributed by www.globalindustrial.com 888-978-7759, or Architect approved equal.
- C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable.
- E. Steel expansion dowels shall be hot-rolled plain steel rounds conforming to the requirements of AASHTO M31, Grade 60 and consisting of a one-half inch by twenty-four inches (1/2"x24") smooth steel dowel and compatible waxed tube sleeve, twelve inches (12") in length. Dowels and sleeves shall be as furnished by A.H. Harris & Sons, Inc., by U.S. Steel Corp., by Edgcombe Steel Corp., or approved equal. Dowels shall be epoxy coated.

2.4 PORTLAND CEMENT CONCRETE

- A. Cast-in-place concrete shall be air-entrained concrete with a minimum 28-day compressive strength of 5,000 pounds per square inch. For below grade elements, minimum 28-day compressive strength of 5,000 pounds per square inch. Concrete shall be air-entrained 7% minimum, +/- 1% by volume. Concrete slump shall have a slump of 3 inches to 5 inches. Maximum aggregate size shall be 3/4 inch. Thickness of concrete shall be as noted on the Contract Documents.
- B. Cement shall be stored in a weather-tight structure and in such a manner as to prevent deterioration or intrusion of foreign matter. It shall be easily accessible for proper inspection and identification of each shipment. Cement that has hardened or partially set shall not be used.

2.5 CURING COMPOUNDS

- A. All curing compounds shall conform to requirements of ASTM Designation C-309, Type I, clear and C-156. No materials containing wax or saponifiable materials will be permitted.
- B. Curing compound in areas that will be exposed to view in the finished work, or to receive a painted finish, and areas to receive a concrete topping or ceramic tile mortar beds, seamless composition flooring, synthetic athletic surfacing, or other similar finishes, shall contain a fugitive dye, and shall

be of a type that will become brittle and easily removable after about 3 weeks to allow dust-proofing treatment specified here in after.

- C. Curing compound shall be Master Builders "Master Seal", Symons "Cure and Seal", Sonneborn "Kure-N-Seal", "CS-309" by W.R. Meadows or equal, conforming to ASTM 309, Type 1 and 2.

2.6 EXPANSION JOINTS

- A. Provide expansion joints, unless otherwise indicated on the Contract Documents, at 30 feet on-center, maximum.
- B. Expansion Joint Filler:
 - 1. Expansion joint filler between pours of concrete paving shall have a removable cap cover for the joint filler with integral permanent plastic bond breaker such as Snap-Cap from Seal Tight manufactured by W.R. Meadows, Inc., or approved equal. Cover width shall be sized to match width of joint filler. D.
 - 2. Expansion joint filler at fixed objects shall be closed cell polymer foam meeting requirements of ASTM D1752, Sections 3.1 to 3.4, based on compression requirement of 10 psi minimum and 25 psi maximum. Recovery rate following 50-percent compression shall exceed 99-percent recovery, per ASTM D545. Foam shall be Ceramar foam filler manufactured by W.R. Meadows Co. or an approved equal. Joint sealant shall color match concrete refer to section 03300 for joint sealant requirements.
- C. Expansion Dowels: refer to Reinforcing Materials in this Section

2.7 JOINT SEALANT

- A. Joint sealant and primer shall be polyurethane-based, one component, elastomeric sealants, complying with Fed. Spec. TT-S-00230C, Class A Type 1. Color to match concrete. Sealants shall be self-leveling pour grade type.
 - 1. Vulkem 45, as manufactured by Mameko International, 4475 East 175th Street, Cleveland Ohio 44182, (800) 321-6412.
 - 2. Urexpan NR-210, as manufactured by Pecora Corporation, 165 Wambold Road, Harleysville, PA 10348, (215) 723-6051
 - 3. PSI 951, as manufactured by Polymeric Systems Inc., Phoenixville, PA, (800) 228-5548.
- B. Provide only materials which are known to be fully compatible with the actual installation condition, as shown by the manufacturer's published data or certification. Use manufacturer's recommended joint primer.

2.8 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to Architect.

- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by the Landscape Architect.
- C. Adjustments to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

2.9 CONCRETE MIX

- A. Job-Site Mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. yd. or fraction thereof.
- B. Provide batch ticket for each batch discharged and use in work indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.
- C. Ready-Mix Concrete: Comply with requirements of ASTM C94, and as herein specified.
- D. Delete reference for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.
- E. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
- F. When air temperature is between 85 Deg. F (30 deg. C) and 90 Deg. F (32 deg. C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 Deg. F. (32 deg. C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 PREPARATION OF SUBGRADE

- A. Areas to be paved shall be compacted and brought to subgrade elevation and all work specified, performed and paid under Earth Moving Specification Section. Prepared subgrade will be inspected by the Owner's Representative. Contractor shall arrange to have the Owner's Representative visit the site to inspect and approve subgrade.

3.2 AGGREGATE BASE COURSE

- A. Base course shall be specified, provided, installed and paid for under 31 23 00 Excavation Filling and Grading Specification Section.

3.3 FORMWORK

- A. Forms shall conform to the lines, dimensions and shapes of concrete shown providing for openings, recesses, keys, slots, beam pockets and projections as required.
- B. Make forms clean and free of foreign material before placing concrete.
- C. Form liners shall be applied to all exposed vertical concrete surfaces and shall be secured in place on vertical or inclined surfaces by tension, taught against the forms so that the surface is smooth

with no creases or loose material. Stapling or other fixing devices may be used after the liners have been tensioned. Form release agents shall not be used on vertical concrete surfaces.

D. Do not use earth cuts as forms for vertical surfaces, unless approved by the Architect.

E. Design of Formwork

1. Comply with ACI 301, Chapter 4, Paragraph 4.2. Formwork drawings shall bear the seal of licensed professional engineer.
2. Form rods and tie wires of exterior surfaces shall slope down from the inside to outside of forms.
3. Provide forms so that no discernible imperfection is in evidence in finished concrete surfaces due to deformation, bulging, jointing, or leakage of forms.

3.4 REINFORCEMENT MATERIAL

- A. Steel reinforcing shall be thoroughly cleaned of all foreign material which may reduce the bond between the concrete and reinforcing.
- B. Welded wire mesh shall be placed midway within the depth with plastic Mesh-Ups support chairs specified herein in accordance with the manufacturer's recommendations. Mesh shall be parallel to the finished concrete pavement surface. Do not pour concrete over top of reinforcement unless it is supported underneath. Where mesh reinforcement is spliced, it shall be lapped at least 12 inches.
- C. Reinforcing steel anchors shall be securely wired in the exact position called for, and shall be maintained in that position until concrete is placed.
- D. Unless otherwise indicated on the Contract Documents, reinforcing shall extend within 2 inches of formwork and expansion joints.

3.5 EXPANSION JOINTS

- A. Expansion joints shall be as located on the Contract Documents. Expansion joint shall be formed in the concrete to required width with preformed joint filler in place. Joint filler shall extend the full depth of the slab.
 1. For concrete pavements, depth of joint filler shall be as required to form a 3/4 -inch deep sealant recess below finished concrete surface.
- B. Provide expansion joints as indicated on the Contract Documents. Unless otherwise indicated on the Contract Documents, expansion joints shall be located at 20 feet vertically on-center maximum for walls and 30 feet maximum for pavements.
 1. Expansion joints shall be placed where pavement meets flush foundations and footings, concrete vertical curb or other vertical structures, including light bases, hydrants, walls, buildings, piers and walls, and at other conditions as shown on the Contract Documents.
 2. Contractor shall request the presence of the Owner's Representative to review the layout of expansion joints prior to pouring the concrete.
 3. Follow the manufacturer's application recommendations for joint filler and sealer.
 4. Joint alignment shall be straight and true.

- C. Where the expansion dowel system is used in the expansion joints, steel plates and pocket former sleeves shall be set parallel with the top and bottom surfaces of the concrete slab and installed according to the manufacturer's installation instructions.

3.6 PORTLAND CEMENT CONCRETE

A. Ready Mix Concrete

1. Comply with ASTM C94.
2. Add mixing water only at the site.
3. Discharge the concrete completely at the site within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather reduce this time limit so that no stiffening of the concrete shall occur until after it has been placed.
4. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.

B. Placing Concrete

1. Preparation before placing: Conform to ACI 310, Chapter 8, Paragraph 8.1.
2. Conveying
 - a. Comply with ACI 301, Chapter 8, Paragraph 8.2.
 - b. Provide a spout or downpipe and elephant trunk or other appropriate method to prevent concrete from falling freely through a height greater than 3 feet.
4. Depositing: Comply with ACI 301, Chapter 8, Paragraph 8.3.
5. Consolidating: Comply with ACI 309R, "Recommended Practice for Consolidation of Concrete". All concrete shall be vibrated. Maintain at least one vibrator as a stand-by.

C. Curing

1. It is essential that concrete be kept continuously damp from time of placement until end of specified curing period. It is equally essential that water not be added to surface during floating and troweling operations, and not earlier than 24 hours after concrete placement. Between finishing operations surface shall be protected from rapid drying by a covering of waterproofing paper. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of a fog spray of water, applied as often as necessary to prevent drying, but not sooner than 24 hours after placing concrete. None of the water so applied shall be troweled or floated into surface.
2. Concrete surfaces shall be cured by completely covering with curing paper or application of a curing compound.
 - a. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.

- b. If concrete is cured with a curing compound, compound shall be applied at a rate of 200 square feet per gallon, in two applications perpendicular to each other.
- c. Curing period shall be seven days minimum.

D. Form Removal

- 1. Do not remove forms until the concrete has thoroughly hardened and has attained sufficient strength to support its own weight and construction live loads to be placed thereon, without damage to the structure. In general, do not disturb forms for framing until the concrete has attained at least 40% of design strength for side forms and 80% of design strength for bottom forms. Remove no forms for 24 hours after placing concrete. Protect concrete walks from pedestrian traffic for a period of 3 days after placing. Damp cure as per standards above. Be responsible for proper form removal and replace any work damage due to inadequate maintenance or improper or premature form removal.
- 2. Where use of metal form ties extending to within less than 1-1/2 in. of the face of permanently exposed concrete has been unavoidable, cut off such ties at least 1-1/2 in. deep in the concrete but not less than 72 hours after concrete has been cast. Remove forms by methods which will not spall the concrete or cause any injury whatsoever. Hammering or prying against concrete will not be permitted.

3.7 FIELD QUALITY CONTROL

- A. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Landscape Architect.
- B. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
- C. Slump: ASTM C143, one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; one for each set of compressive strength test specimens.
- E. Concrete Temperature: Test hourly when air temperature is 40 deg. F (4 deg. C) and below, and when 80 deg. F (27 deg. C) and above; and each time a set of compression test specimens made.
- F. Compression Test Specimen: ASTM C31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
- G. Compressive Strength Tests: ASTM C39; one set for each 100 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 5,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
- H. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- I. Strength level of concrete will be considered satisfactory if average of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.

- J. Test results will be reported in writing to Architect and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day test.
- K. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

3.8 FINISHING

- A. General Requirements for Flatwork: Strike off top surfaces of finished fill and monolithic slabs true and level within a tolerance of 1/8 in. in 10 ft. and measured with a 10 ft. straightedge placed in any direction at any location. Set edge forms and intermediate screed strips accurately and sufficiently rigid to support screeds and so that proper surface elevations and concrete thickness are achieved allowing for dead load deflection and camber of formwork. Take measurements and control tolerances by the use of transit instrument. Upon completion of leveling, remove screed and fill spaces with concrete. Concrete shall have a medium broom finish of parallel marks. Brooming shall be at right angles to the axis of walk or as shown on the Drawings.

Concrete surfaces for sub-base at unit pavement shall be woodfloated with a slightly rough surface, and finished true to line and grade per the Contract Documents.

- B. Control Joints shall be saw cut joints, sawn by using a diamond blade concrete power saw. Joint shall be made after concrete has completely cured and reached the required strength. Saw joints shall be straight and true to the Contract Documents.

- 1. Saw shall cut into slab at least 25 percent of slab depth.

3.9 PROTECTION OF CONCRETE SURFACES

- A. Protection of Concrete: Under no circumstances shall the Contractor pour and leave the fresh concrete open to vandalism, while it is setting up. Damaged concrete shall be subject to rejection by the Landscape Architect.

3.10 ACCEPTANCE STANDARDS

- A. The following acceptance standards shall be applied to this Contract. Any portion of the concrete paving that does not meet required acceptance standards shall be removed at the direction of the Owner's Representative. Saw cut pavement at nearest adjacent tooled joint, remove concrete pavement and discard off site in a legal manner and replace with new concrete pavement meeting the requirements of this Section.

- 1. Pavement surfaces shall be free of all cracking.
 - 2. Pavement surfaces shall not pond water.
 - 3. Pavement surfaces shall be free of visible high and low spots.
 - 4. Steel mesh reinforcing shall not penetrate the surfaces or sides of the concrete pour.
 - 5. Sawcut joints and all expansion joints shall be straight, true, uniform in width and free from twists, bends, kinks and misalignments.
 - 6. Edges and the associated edging patterns shall be consistent, true, crisp and complete.

7. Pavement shall show no graffiti. Pavement shall show no rubbed surfaces indicative of attempts to erase graffiti.
8. Expansion joints and score joints shall be placed as required by the Contract Documents.
9. Concrete surfaces shall be free of all stains, including those created during the course of the construction by the Contractor, caused by natural events, or caused by vandalism.
10. All sawcut joints and expansion joints shall be flush.
11. Pours different in color as determined by the Owner's Representative.
12. Pours without expansion joints cast into them.
13. Pours not conforming to the Contract Documents.
14. All forms shall be removed from the site.
15. Exposed wall surfaces shall be free of surface voids and projections.

END OF SECTION

SECTION 32 14 00
UNIT PAVERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions, Division 0 and Division 1, General Requirements, apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment and services necessary to complete the work of this Section as specified herein, as shown on the drawings, or both.
- B. The work of this Section includes, but is not limited to the following:
 - 1. Subbase and base course construction
 - 2. Concrete Unit Pavers: permeable
 - 3. Salvaged Memorial Brick Pavers on concrete setting bed

1.03 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:
 - 1. Section 31 20 00 Earthwork
 - 2. Section 32 16 00 Curbing
 - 3. Section 31 25 00 Erosion Controls
 - 4. Section 32 12 00 Asphalt Paving
 - 5. Section 32 13 13 Concrete Pavement
 - 6. Section 33 40 00 Stormwater Drainage
 - 7. Section 03 30 00 Cast in Place Concrete; concrete for footings and foundations

1.04 REFERENCES

- A. American Society of Testing and Materials (ASTM):
 - 1. C 33 - Specification for Concrete Aggregates.
 - 2. C 136 - Method for Sieve Analysis for Fine and Coarse Aggregate.
 - 3. C 140 - Sampling and Testing Concrete Masonry Units.
 - 4. C 936 - Specification for Solid Interlocking Concrete Paving Units.
 - 5. C 979 - Specification for Pigments for Integrally Colored Concrete.
 - 6. D 448 – Standard Sizes of Processed Aggregates.
 - 7. D 698 and D 1557 -Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures.
 - 8. D 2940 - Graded Aggregate Material for Bases or Sub bases for Highways or Airports.

1.05 SUBMITTALS

- A. Design Mix Submittals: Submit design mix submittals including description of materials, proportions, and mechanical sieve sizes of aggregates for the following:
 - 1. Sieve analysis for polymeric joint sand.
 - 2. Sieve analysis for grading of bedding/aperture/joint aggregate material.
 - 3. Permeable aggregate stone for all sizes required.
- B. Samples: the following samples shall be reviewed in the field for the following items:
 - 1. Furnish not less than four (4) individual concrete pavers of each type, size, and finish required to Landscape Architect for approval. Samples shall exhibit the full color range of pavers to be provided.
 - 2. Submit a sample of edge material, 12 inches length, with one stake.
- C. Manufacturer's Product Data: Manufacturer's product data shall be submitted for the following items:
 - 1. Edging system
 - 2. Tack coat
 - 3. Neoprene-modified asphalt adhesive
 - 4. Concrete Unit Paver
 - 5. Polymeric jointing sand
- D. Test results from an independent testing laboratory for compliance of paving unit requirements to ASTM C 936 and CSA A231.2-95 for resistance to freeze-thaw and or other applicable requirements.

1.06 MOCK-UPS

- A. Construct sample panels of permeable concrete pavers and concrete unit pavers on the specified base and as per Contract Documents. Sample panel shall exhibit proposed color range, texture, band, jointing, pattern, finish, paver size, and workmanship. Unless otherwise indicated, size of panel shall be 4 feet x 4 feet minimum.
 - 1. One sample panel representing permeable concrete pavers shall be constructed on base materials as per Contract Documents, showing pavers, jointing and No. 8 stone as required for the finished work.
 - 2. The quality of workmanship, paver jointing and cleanliness of pavers after installation must be approved by the Landscape Architect before permanent paving is started.
 - 3. If the original sample is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved sample is obtained.
 - 4. The approved sample shall become the minimum standard for unit paving for this project.

1.07 PROJECT CONDITIONS

- A. Weather: Perform work only when existing and forecasted weather conditions are within the limits established by referenced standards. Perform work only when ambient temperature is forecasted to be at least 50-degrees Fahrenheit and when temperatures have not been below 35-degrees Fahrenheit for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess amount of moisture or is in a frozen state.
- B. Construction methods, transportation and delivery of mixtures, spreading, finishing, compaction joints, etc. shall conform the Section 460 of the Massachusetts Department of Transportation, Standard Specifications for Highways and Bridges unless otherwise specified herein.

- C. Traffic Control: Maintain access for vehicular and pedestrian traffic as required and for other construction activities.
- D. Grade Control: Establish and maintain required lines and elevations.

1.08 REGULATORY REQUIREMENTS

- A. Strictly comply with applicable codes, regulations and requirements of authorities having jurisdiction.

1.09 QUALITY ASSURANCE

- A. Installer must review installation procedures of all unit paving and sequence of work with General Contractor to ensure proper coordination with other subcontractors and suppliers whose work is affected by the delivery schedule and installation of paving work.
- B. Paver manufacture shall be an ICPI Certified Producer.
- C. Installation shall be by a contractor and crew with at least five years' experience in placing concrete pavers on project of similar size and scope.
- D. Contractor shall conform to all local, state licensing and bonding requirements and shall have received a Record of Completion of the ICPI Commercial Paver Technician Course or be an ICPI Certified Contractor.
- E. Do not install subbase or base materials, or pavers, during heavy rain or snowfall. Do not install subbase or base or pavers over frozen materials.

1.10 TESTING

- A. During the placing and rolling operation, repeated checks shall be made to ascertain the correct rate of application to provide the required compacted thickness.
- B. If the average thickness is deficient from the specified thickness by one quarter (1/4) inch or more, the extent of the deficient area shall be corrected at the Contractor's expense.
- C. Upon completion of testing, the Contractor shall properly fill all test holes by compacting a fine aggregate bituminous concrete for the full depth of the core. The finished surface shall be smooth.

1.11 COORDINATION

- A. This Contractor shall coordinate with all other trades especially grading, curb installation, electrical and plumbing contractors, through the General Contractor in order to prevent covering up unfinished or uninspected work and loss of time or labor by mis-scheduling and to assure the steady progress of all work of the Contract. Any rework shall be done at no cost to the Owner.

1.12 LAYOUT AND GRADES

- A. A Registered Land Surveyor or Registered Professional Engineer employed by the Contractor shall lay out all lines and grade work in accordance with the Contract Documents.

1.13 DISTURBING EXISTING PAVEMENT DURING CONSTRUCTION

- A. Existing paved areas shall be protected from damage by construction activities to the extent possible. Where sections of the finished paved areas have to be removed, the edges shall be saw cut in all cases and patched.
- B. Existing finished paved areas that require extensive cutting and patching or have become damaged and cannot be satisfactorily repaired by cutting and patching shall be resurfaced. These resurfaced areas shall be large enough to be applied by paving machines. Shape of

these resurfaced areas shall be near and in rectangular patterns or shall conform to the shape or edges of other adjacent surface improvements. Edges of resurfaced areas shall be saw cut and existing pavements shall be removed from a distance of two feet into areas to be resurfaced, so that new pavement can neatly blend into existing pavement showing no joints or imperfections. If the gravel base course has been disturbed, the Contractor shall remove the disturbed material, repair the existing gravel base and apply a new binder course as specified herein.

- C. All paving beyond the project's property line shall be in accordance with the requirements of the authority having jurisdiction. Provide traffic control for any work within the City's Right-of-Way.

PART 2 - PRODUCTS

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 20 00 EARTHWORK to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 20 00 EARTHWORK. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, UNIT PAVERS, at no additional cost to the Owner.

2.02 CONCRETE UNIT PAVERS

- a. Hexagon: The concrete unit paver shall be the City Park Paver, Umbriano finish, color: winter marvel. The final color and finish shall be approved by the Landscape Architect after the samples are approved.
- b. The color pattern and layout distribution shall be provided in detail by the Landscape Architect during the submittal process
- A. Additional acceptable manufacturers must meet paver dimensions, smooth finish and match the "basis of design" colors (Provide custom color if standard color does not match)

2.03 ASPHALTIC PRIMER AT MEMORIAL BRICK PAVERS

- A. Primer for concrete base beneath bituminous setting bed and memorial brick pavers shall be an emulsified asphalt rapid setting type conforming to AASHTO M 140, Grade RS-1, or AASHTO M 208, Grade CRS-1.

2.04 ASPHALT SETTING BED AT MEMORIAL BRICK PAVERS

- A. Asphalt cement to be used in the bituminous setting bed shall conform to ASTM D 3381. Viscosity grade shall be A.C. 10 or A.C. 20.
- B. Fine aggregate to be used in the bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coating, lumps of clay, alkali salts, and organic matter. Aggregate shall be uniformly graded from "coarse" to "fine" with 100 percent by weight passing the No. 4 sieve and shall meet the gradation requirements when tested in accordance with ASTM C 136.

- C. Fine aggregate shall be dried and shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees Fahrenheit at an asphalt plant. The approximate proportion of materials shall be 7 percent cement asphalt and 93 percent fine aggregate. Each ton of material shall be apportioned by weight in the approximate ratio of 145 pounds asphalt to 1,855 pounds sand. The Contractor shall determine the exact proportions to produce the best possible mixture for construction of the bituminous setting bed to meet specified requirements.

2.05 NEOPRENE-MODIFIED ASPHALT ADHESIVE AT MEMORIAL BRICK PAVERS

- A. Neoprene modified asphalt adhesive shall be asbestos-free, rubberized asphalt cement designed especially for adhering pavers to concrete or rolled asphalt.
- B. Product shall be Karnak 230 or approved equal and meet the following meet the requirements:
 - 1. Mastic (asphalt adhesive):
 - 1) Fiber content – 105
 - 2) Neoprene 2%
 - 3) Solids (base) content by volume = 68%
 - 4) Weight = 8.0 to 8.5 pounds/gallon
 - 5) Softening Point (ASTM D 36) = 150 F minimum.

2.06 POLYMERIC SAND FOR JOINT FILLER AT MEMORIAL BRICK PAVERS

- A. Joint filler between paver joints shall be comprised of a colored polymeric sand meeting ASTM C 33. Sand mixture shall contain a coloring additive to match the joint filler mixture with the color of the concrete pavers.
 - 1. Polymetric sand for joint filler shall be HP NextGel Jointing sand as supplied by Techniseal www.techniseal.com or an approved equal.
 - 2. Color of joint filler shall match the dark color range of the memorial brick paver and shall be approved by the Landscape Architect.
 - 3. Sand shall be from a single source. Source of supply shall not be changed during course of job without written permission of the Landscape Architect.

2.07 EDGING AT PERMEABLE PAVERS

- A. Edge restraints shall be PaveEdge or Landscape Architect approved equal, required where permeable pavers abut flexible surfaces such as landscaping, rubber surfacing and asphalt and are not locked in place by abutting rigid material such as concrete paving, curbing or wall.
- B. PVC plastic edging strips shall be Pave-Edge paver edge restraint system, manufactured by Pave Tech, Inc., Prior Lake, MN 55372, Phone: (800) 728-3832; or approved equal.
 - 1. For straight edges, use Pave Tech Rigid Edging. Edging shall be furnished in 15 foot sections in both rigid and flexible edging as required for the work.
 - 2. Provide manufacturer's PVC connecting pipe cut to 6 inch length, for joining sections together.
 - 3. Steel spikes, 10 inches x 3/8 inch diameter shall be furnished and driven in every 1 foot on center.

2.08 WATER

- A. Water shall be potable and shall be free of injurious contaminants.

2.09 PROCESSED STONE AND BEDDING MATERIALS AT PERMEABLE PAVERS

A. ASTM # 8 Stone Sand - Bedding and Joint/Void Filler

Sieve Size	Percent Passing
½"	100
⅜"	85 to 100
No. 4	10 to 30
No. 8	0 to 10
No. 16	0 to 5

B. ASTM # 467 1½" Open Graded Base Stone–Base

Sieve Size	Percent Passing
2"	100
1½"	95 to 100
1"	35 to 70
¾"	0 to 25

C. ASTM # 57 Open Graded Stone – Base

Sieve Size	Percent Passing
1½"	100
1"	95 to 100
½"	25 to 60
No. 4	0 to 10
No. 8	0 to 5

D. ASTM # 2 Open Graded Stone – Base/Sub base

Sieve Size	Percent Passing
3"	100
2½"	90 to 100
2"	35 to 70
1½"	0 to 15
¾"	0 to 5

PART 3 - EXECUTION

3.01 PAVED AREA FINISH GRADING

- A. Provide finish grading as shown on the Drawings and as specified. The final surface tolerance shall not deviate more than 3/8" over 10'.
- B. Cross-slopes of all plaza areas, accessible routes, and sidewalks adjacent to roadways shall be graded at a maximum of 2%.
- C. All sidewalks and walkways shall be installed at a maximum grade of 5% in the direction of travel.

3.02 INSTALLATION OF MEMORIAL BRICK PAVERS

A. Bituminous Setting Bed

1. Control bars 3/4 inch deep shall be placed directly over the base. If grades must be adjusted, wood chocks under depth control bars shall be set to proper grade. Set two bars parallel to each other to serve as guides for the striking board. The depth control bars must be set carefully to bring the pavers, when laid, to proper grade.
2. While still hot (not less than 250 degrees Fahrenheit (121 degrees Centigrade) some of the bituminous bed material shall be placed between the parallel depth control bars. This bed shall be pulled with the striking board over the control bars several times. After each passage, low porous spots shall be showered with+ fresh bituminous material to produce a smooth, firm, and even setting bed. As soon as this initial panel is completed, advance the first bar to the next position in readiness for striking the next panel. After the depth control bars and wood chocks have been removed, carefully fill any depressions that remain.
3. The setting bed shall be rolled with a power roller to a nominal depth of 3/4 inch (19.05 mm) while still hot. The setting bed thickness shall be adjusted so that when the concrete pavers are placed and rolled, the top surface of the pavers will be at the required finished grade.

4. A coating of neoprene-modified asphalt adhesive shall be applied by mopping, squeegeeing, or troweling over the top surface of the bituminous setting bed so as to provide continuous bond under the pavers.
 - 1) If adhesive is trowel-applied, trowel shall be serrated type with serrations not to exceed 1/16 inch (1.59 mm).

B. Setting Memorial Brick Pavers

1. Memorial Brick pavers shall be set on a bituminous setting bed. Setting bed shall be protected from damage prior to setting pavers.
2. Only competent workmen under adequate supervision shall perform the work of setting Memorial Brick pavers. Set pavers in accordance with manufacturer's recommendations. Memorial Brick pavers shall be set true to the required lines and grades in the pattern detailed on the Contract Documents.
3. After the modified asphalt adhesive is applied, pavers shall be carefully placed by hand, set true to the required lines and grades in the pattern shown on the Contract Documents. Accurate alignment shall be maintained. The Landscape Architect will approve the start of paving layouts. Paving layouts shall always begin at building entries.
4. Pavers shall be neatly cut and fitted at all perimeters and closures to fit neatly and closely. Pavers shall be tightly butted. Joints between pavers shall be uniform and shall not exceed 1/8 inch in width. Joints greater than 1/8 inch in width will not be accepted. Surface edge of one paver shall be level with the next adjacent pavers so that no voids, rocking motions, or tripping hazards are encountered. There shall be no deviation from a true grade greater than 1/4 inch in 10 feet. All finish paved areas shall slope to drain at a minimum of 1/8 inch in 1 foot.
5. All cutting and patching required to complete the work shall be done (including the filling and closing of all openings) with water-cooled radial cut-off type masonry saws with diamond-tipped blade for a sharp, straight edge. Cut edges shall be plumb and straight. Scoring and breaking will not be acceptable.
 - 1) After cutting of pavers, grind all cut edges of top surfaces of pavers to create a beveled, 45-degree angle equal to the manufacturer's bevel. Ground bevels shall be straight and true and shall be accomplished using a sufficiently fine grinding wheel or blade to prevent apparent grind marks on the bevels.
6. After a sufficient area of pavers has been installed, joints of pavers shall be filled by sweeping joint filler, as specified, performed and paid for under this Section,
7. Completed surface shall be compacted by running a medium plate vibrator across the top of the pavers. Additional joint filler material shall be swept in the joints during vibration to completely fill joint space.
8. Newly laid pavers shall be protected at all times by panels of plywood. These panels may be advanced as work progresses; however, the plywood protection shall be kept in areas which will be subjected to continued movement of materials and equipment. All necessary precautions shall be taken in order to avoid depressions and protect paver alignment.

C. Joint installation at Memorial Brick Pavers

1. Joint filler shall be swept dry into the joints between pavers until the joints are completely filled. Surface shall be swept clean. Swept surface shall then be thoroughly dampened with a low-volume fine spray of water.

- 1) Sweep polymeric sand into paver joints until joints are filled solid. Fog lightly with water and repeat a minimum of three times or until joints are compacted and full.
 - 2) Prior to acceptance, the paved area shall be flooded with water to assure that there are no depressions. Pavers with top surfaces greater than 1/16 inch above or below adjacent pavers shall be removed and reset. Remove and reset pavers as required until surface is true to line and grade. Refill joints as necessary until all joints are filled to finish grade.
2. Memorial Brick paving shall be kept damp by intermittent spraying for three days, minimum, to effectively cure the joints

3.03 INSTALLATION OF PERMEABLE CONCRETE UNIT PAVERS

A. Underdrainage, Sand Based Structural Soil, and Stone Base Installation

B. Edging at Permeable Unit Pavers

1. Plastic edging strips shall be installed at locations indicated on the Contract Documents. Where required, edging shall be cut square and accurately to required length.
 - 1) Plastic edging shall be securely staked in required position. Stakes shall be driven every 12 inches in straight runs.
 - 2) Adjacent lengths shall be attached using manufacturer's standard connection pipe according to manufacturer's published instructions.
 - 3) Edging shall be set plumb and vertical at required line and grade. Straights sections shall not be wavy; curved sections shall be smooth and shall have no kinks or sharp bends.

3.04 CLEANING OF CONCRETE PAVER SURFACES

- A. After completion of concrete paving, surfaces shall be carefully cleaned, removing all dirt, excess filler, and stains.
- B. Clean pavers using an approved masonry cleaner and soft bristle brush.

3.05 GUARANTEE

- A. The Contractor shall guarantee all pavement installations, including materials and workmanship, for a period of one year from the date of acceptance. The Contractor shall make interim repairs as necessary to maintain all paved areas in good, usable conditions.

END OF SECTION

SECTION 321600
CURBING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract and Division 1 General Requirements, apply to this section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section includes, but is not limited to the following:
 - 1. Vertical Granite Curb
 - 2. Flush Cast-in-Place Concrete Curb

1.03 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 024113 – Site Preparation
 - 2. Section 033000 – Cast-in-Place Concrete
 - 3. Section 311000 – Site Clearing
 - 4. Section 312000 - Earthwork
 - 5. Section 321200 - Asphalt Paving
 - 6. Section 321313 – Concrete Pavements
 - 7. Section 323000 - Site Improvements
 - 8. Section 329100 – Loam and Planting Preparation
 - 9. Section 334000 - Storm Drainage Utilities

1.04 INTENT

- A. The intent of the work of this Section is to provide curbing which complies with Commonwealth of Massachusetts, Department of Transportation, "Standard Specifications for Highways and Bridges," (hereinafter referred to as SSHB) Section 500, "Curb and Edging".
- B. Department of Public Works: All work within any public way and all work affecting any public way, including without limitation, roadways, sidewalks, curbs, and other work shall be done in strict compliance with the requirements of the authority having jurisdiction including local and State Standard Specifications, except when Standard Specifications are in conflict with these specifications, the most restrictive and inclusive requirements shall govern.

1.05 SUBMITTALS

- A. Shop Drawings: The name of the Contractor shall be shown on the shop drawings. Finished work shall conform to approved samples and shop drawings.
 - 1. Provide large scale, detailed and complete shop drawings/placement drawings for both granite and precast concrete curbing showing all curbing work including all dimensions, radii, tapered radial curb for accessible curb cuts, tapered curb with lengths clearly

indicated and transitions curbs for approval.

2. Provide an itemized schedule of all curb pieces. Curbing shall be individually listed by type with radius and straight pieces noted with their lengths. Tapered, transition and corner curbs shall be individually listed.

- B. Product Data: Submit manufacturers' certifications stating that materials comply with requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products adequately protected against damage. Handle in strict compliance with manufacturer's instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to, chipping, staining, cracking and other damage. Cracked, chipped, or stained units will be rejected and shall not be utilized in this work. Sequence deliveries to avoid delays, but minimize on-site storage.

1.07 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting or affected by the work of this Section, including paving work to be done by others, as necessary to assure the steady progress of the Work.

PART 2 - PRODUCTS

2.01 GRANITE CURB

- A. Granite shall be "New England" structural granite conforming to ASTM C 615, Class I Engineering Grade, suitable for curbstone use.
 1. Curb shall be new, light gray, of a smooth splitting appearance free from seams and other imperfections which impair structural integrity, and with material degradation than 32 percent, as determined by ASTM C 131.
- B. Vertical Granite Curb: Furnish vertical granite curbing, type VA-4 as described in Section M9.04.0 and M9.04.1 of the Massachusetts Department of Transportation SSHB. The top surface shall be sawn to a true plane, and shall have no projections or depressions greater than 1/8 inch. The front and back arris lines shall be pitched straight and true and there shall be no projections on the back surface for 3 inches down from the top that would exceed a batter of 4" per foot. The front surface shall be at right angles to the planes of the top and ends and shall be smooth quarry split, free from drill holes. Minimum length shall be 6 feet unless otherwise shown on the Drawings.
 1. Radial type VA-4 curb shall be used on all curves with a radius of 100 feet or less, where vertical granite curb is called for on the Drawings.
- C. Vertical to Flush Transition Curb: Furnish vertical to flush transition curbs of same material as adjacent curb where shown on the drawings, to taper the reveal of the curb from 6 inches to 0 inches. Transition curb along a curve shall be of the same radius. The curb shall be manufactured for the purpose intended at the plant and shall not be field cut.

2.02 MORTAR

- A. Cement mortar shall conform to Section M4.02.15 of the Massachusetts Department of Transportation SSHB.
- B. Concrete for curb setting shall have a minimum 3,000 PSI compressive strength at 28 days.

2.03 FLUSH CAST-IN-PACE CONCRETE CURB

- A. Concrete for Cast-in-Place Concrete Curb shall have a 28-day compressive strength of at least 4,000 pounds per square inch. Higher minimum compressive strength indicated in the drawings and/or specifications for individual improvements shall govern see section 32 13 13 Exterior Concrete.
- B. Fiber reinforcing shall be Matrix Fibrillated Fibers by FRC Industries of Freeport, FL 888-783-2517. Alternative approved manufacturers include:
 - 1. Sika Corporation, New Jersey, 201-933-8800
 - 2. Cemex, Alabama, 205-841-4711
- C. MATRIX fibrillated fibers are manufactured from 100% homopolymer, virgin polypropylene resin, containing no reprocessed olefin materials, and in compliance with ASTM C-1116-97 "Standard specification for fiber-reinforced concrete and shotcrete." FRC Fibers are specifically engineered for use in concrete as secondary reinforcement, and for the purpose of controlling plastic shrinkage and settlement cracking. FRC Fibers comply with requirements as defined in the 1997 Uniform Building Code – ICBO, and in the National Building Code – SBCCI.
- D. Provide smooth broom finish at all exposed concrete curbing.
- E. Fence posts shall be embedded directly within curb as indicated on the Drawings. Fence posts surfaces shall remain free and clear of dirt and debris as well as remain free of damage as a result of the concrete work.
- F. Sawn control joints at a maximum 20 feet spacing or as indicated in the Drawings shall be perpendicular to concrete curb and penetrate 1 inches minimum into edger. Care should be taken to avoid chipping or damage to concrete curb.

2.04 CONCRETE

- A. Concrete for curb setting shall be 4,000 PSI as specified in Section 32 13 13 – Concrete.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All granite curbing shall be installed after the installation of the Binder Course and prior to installation of the Top Course. Curb shall be set to the line and grade required and shall project six inches above finished grade elevations where not otherwise shown as flush or as a transition.
- B. Preinstallation Examination Required: The installer shall examine previous related work, and conditions under which this work is to be performed and notify Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means installer accepts substrates, previous work, and conditions.
- C. Manufacturer's Instructions: Strictly comply with Mass. S.S.H.B. including Section 500 of the latest edition for the installation of specified curb, unless these specifications are more restrictive. In such cases these specifications will prevail.
- D. Trench Preparation: Curb shall be set in a trench excavated to a width of 20 inches. The bottom of the trench shall be 6 inches deeper than the depth of the curbstone. The subgrade shall then be filled to proper levels with a minimum of 6 inches of compacted gravel borrow at the lines and grade shown on the plan to provide continuous support to the bottom of curb. Gravel borrow shall be thoroughly rammed or tamped until firm and unyielding.
- E. Granite Curb Installation: Set curbs true to line and grade with vertical exposed curb faces plumb and with curb top surface parallel to adjacent surfaces. The maximum space between joints in the top and face of curb down 8 inches from the top shall not be more than 1/4 inch.

The arris formed by the intersection of the plane of the joint with the planes of the top and exposed faces shall have no variation from the plane of the top and exposed faces greater than 1/4 inches. Place concrete continuously along the front and back of the curb as indicated on the Detail. The curbing contractor shall confirm true vertical and horizontal alignment immediately after setting concrete and adjust curb sections as necessary to provide a true line.

- F. Pointing Joints in Granite Curb: The joints between curbstones (both front and back) shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. Prior to installing adjacent finish surface improvements. After pointing, the curbstones or edging shall be satisfactorily cleaned to remove all excess mortar from the exposed curb surfaces.
- G. Tolerances: The following installed tolerances are allowable variations from locations and dimensions indicated by the Contract Documents and shall not be added to allowable tolerances indicated for other work.
 - 1. Allowable Variation from True Plumb: 1/8-inch over exposed face.
 - 2. Allowable Variation from True Line: =1/4-inch in 20-feet.

H. Refer to Section 32 13 13 Concrete for installation of Flush CIP Concrete Curb.

3.02 REPAIR, CLEANING AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Clean exposed surfaces using non-abrasive materials and recommended methods. Remove and replace damaged or unsuitable work that cannot be successfully cleaned or repaired.
- B. Provide temporary protection to ensure work is without damage or deterioration at time of final acceptance. Remove protections and re-clean as necessary immediately before final acceptance.
- C. After completion of the work in this Section, the Contractor shall remove all debris, materials, rubbish, etc. from the site and legally dispose of them. New or existing improvements that have been damaged in the work under this Contract shall be repaired to the satisfaction of the Architect.

END OF SECTION

**SECTION 32 18 16.13
PLAYGROUND PROTECTIVE SURFACING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
 - 1. Grading and Compacting of Subbase
 - 2. Poured-in-Place Rubber Safety Surfacing
 - 3. Cleaning, Repair and Protection

1.3 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
- B. The following related items are included under the Sections list below:
 - 1. Section 01 23 00 - Alternates
 - 2. Section 11 68 00 – Playground Equipment
 - 3. Section 12 93 00 – Site Furnishings
 - 4. Section 31 10 00 – Site Clearing and Preparation
 - 5. Section 31 23 00 – Excavation Filling and Grading
 - 6. Section 32 12 16 – Asphalt Paving
 - 7. Section 32 13 13 – Concrete
 - 8. Section 32 18 17 - Engineered Wood Fiber Surfacing
 - 9. Section 32 90 00 – Planting
 - 10. Section 32 91 00 – Loam and Planting Preparation
 - 11. Section 32 92 00 – Turf and Grasses
 - 12. Section 33 40 00 – Storm Drainage Utilities
- C. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1.4 REFERENCES

- A. The following related items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 2. A.S.T.M. - American Society for Testing and Materials.

B. American Society of Testing and Materials (ASTM)

1. 355 Shock Absorbing Properties of Playing Surface Systems and Materials (GMAX)
2. F1292 Impact Attenuation of Surface Systems Under and Around Playground Equipment
3. F1951 Determination of Accessibility of Surface Systems Under and Around Playground Equipment

1.5 SUBMITTALS

A. Submit Poured-in-Place Rubber manufacturer's Product Literature including IPEMA certification, Specification Data and installation instructions.

1. Provide 2 color samples for each specified color combination identified on the drawings, 12" x 12" square, up to 11 samples (Ratio of 11 12" x 12" squares specified below, to be provided to Owner/Landscape Architect. The final color samples and ratios for each zone to be specified by Landscape Architect during selection process
2. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951.
3. Provide Manufacturer's Warranty for Owner's acceptance.
4. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951. Submit evidence of IPEMA (International Playground Equipment Manufacturer's Association) certification.

B. Submit installer qualifications (Manufacturer-certified installer of system).

1. Installers of the rubber safety surface system shall have five (5) years experience, minimum, and shall provide three (3) local references where installation can be inspected.

C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.7 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.

- C. Substrates: Proceed with work only when substrate construction and penetrating work is complete. Maintain the sub-base in satisfactory condition and properly drained until surface improvement is placed.

1.8 GUARANTEE

- A. The Contractor shall deliver standard written manufacturer's guarantee in the Owner's name covering all materials and workmanship. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

1.9 QUALITY ASSURANCE:

- A. Surface Installer Qualifications: Company specializing in outdoor resilient surfaces in the USA and certified members of NPCAI. The applicator shall be approved and trained, with a minimum of five years' documented experience and have completed 5 public playgrounds in the past 5 years. Conditions of all surface substrates with respect to structural performance shall be evaluated and approved by the surface installer prior to application of surface system.
- B. Performance requirements
 - 1. All safety surfacing within playground equipment use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F 1292 and IPEMA certified for the highest playing point of each piece of play equipment.
 - 2. Surfaces intended to serve as accessible routes of travel shall be firm, stable and slip resistant and shall be meet the requirements of ASTM F 1951 and ASTM F 1292
- C. Post-installation testing
 - 1. Impact attenuation testing shall be performed by a National Recreation and Parks Association/National Playground Safety Institute (NRPA/NPSI) Certified Playground Safety Inspector (CPSI) and trained in the proper operation of the Triax test equipment.
 - 2. Impact attenuation testing shall be performed according to ASTM 1292 in presence of the owner within 30 days of installation. As a precondition of surfacing acceptance, the Contractor shall provide the testing results in writing. Up to 10 drop test locations will be required at each separate play area.
 - 3. If the surfacing does not meet the safety standards or impact attenuation performance requirements, the contractor will be required to bring the surfacing up to compliance within 30 days or less. The extent of failure and determination of replacement will be at the discretion of the Owner. Should they be found during or after installation, any violations of the C.P.S.C. Guidelines, ASTM, ADA or impact attenuation performance requirements shall be corrected to the satisfaction of the owner, Any proposed corrective work shall be reviewed and approved by the Landscape Architect before corrective work begins.
 - 4. Impact attenuation requirements: Gmax test scores shall be less than 150 and HIC scores shall be less than 850 or current ASTM 1292 standard, whichever is more strict.

PART 2 - PRODUCTS

2.1 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 23 00 – EXCAVATION FILLING AND GRADING to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 23 00 – EXCAVATION FILLING AND GRADING. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no additional cost to the Owner.

2.2 POURED-IN-PLACE RUBBER SAFETY SURFACING

- A. Furnish and install Poured-in-Place Rubber Safety Surface complete with gravel base, asphalt binder, sub drainage and concrete edging per the Contract Documents.
- B. To establish a standard of quality, design, and functionality desired, Drawings and Specifications have been based on the material "Playbound" 2-layer poured-in-place by Surface America, www.surfaceamerica.com, PO Box 157, Williamsville, NY 14231; Telephone: (800) 999-0555, Fax: (716) 632-8324 or Architect approved equal. Rep Contact: John McConkey (john.mcconkey@obrienandsons.com)
 - 1. Primer shall be as per manufacturer's system, and recommended by manufacturer.
 - 2. Cushion Course: blend of 100% recycled SBR (Styrene Butadiene Rubber) and aromatic polyurethane binder. Cushion Course thickness per the Contract Documents, and final poured-in-place surfacing depth shall be in accordance with fall height CPSC safety requirements. Required mix proportions by weight: as ratio 14% urethane divided by 86% rubber
 - 3. Top Surface; thickness shall be per the Contract Documents. Required mix proportions by weight: as ratio 18% urethane divided by 82% rubber.
 - 4. Top Surface; thickness shall be per the Contract Documents. Required mix proportions by weight: as ratio 18% urethane divided by 82% rubber. There will be three different colors used throughout the rubber play surfacing for each playground.

The color ratio for each playground is listed below:

Stratton

- 1. Color A (Green) - 30% Black, 30% Bright Green, 30% Hunter Green, 10% Brown
- 2. Color B (Brown) - 40% Black, 30% Brown, 20% Light Grey, 10% Eggshell
- 3. Color C (Grey) - 40% Black, 40% Light Grey, 20% Brown
- 4. Color D (Rubber Mound -Bright Green) - 60% Bright Green, 20% Light Grey, 20% Brown

Peirce

1. Color A (Light Blue) – 60% Light Blue, 20 % Pearl, 20% Teal
2. Color B (Dark Blue) – 30% Black, 30% - Royal Blue, 20% Teal, 20% Light Blue
3. Color C (Light Green) – 50% Bright Green, 30% - Black, 20% Teal
4. Color D (Dark Green) – 40% Black, 30% Hunter Green, 20% Bright Green, 10% Teal

Bishop

1. Color A (Dark Blue) – 40% Black, 40% Royal Blue, 10 % Light Blue, 10% Bright Green
 2. Color B (Grey) – 40% Black, 40% - Light Grey, 10% Light Blue, 10% Bright Green
 3. Color C (Rubber Mound - Bright Green) – Bright Green 50%, Sky Blue 20%, Yellow 20%, 10% Light Grey
5. Other approved manufacturers include
- a. Playsites and Surfaces, 908 Long Island Ave, Deer Park, NY 11729 tel 631-392-0960
 - b. Duraturf by Sports surface specialties, East Aurora, NY 14052 locally represented by Premier Park and Play, contact Doug Knotts 617-244-3317
- C. Loose color samples shall be submitted by the contractor, and approved by Architect. Upon approval, bound color mockups in specified ratios shall be provided for Landscape Architect for final selection. Solar Reflectance values shall be provided for each sample
- D. Materials shall not contain hazardous substances, such as toluene, lead, or mercury compounds or cadmium coloring pigments.
- E. The finished surface shall be slip-resistant; supply ASTM-E-303 slip characteristic test results.
- F. Material shall be ignition-resistant; supply passing ASTM-D 2859 test results.
- G. Material shall be water-permeable, and wear and weather-resistant. Sealants shall be low odor and non-yellowing.

PART 3 - EXECUTION

3.1 SUBBASE, EDGER AND DRAINAGE

- A. Install edger system in accordance with the drawings and per the manufacturer's recommendations. Install the underdrainage as indicated on the Drawings. Install gravel base where indicated on the drawings and in accordance with Section 31 23 00 – EXCAVATION FILLING AND GRADING. Install asphalt binder base where indicated on the drawings and in accordance with Section 32 12 16 – ASPHALT PAVING.

3.2 POURED-IN-PLACE RUBBER SAFETY SURFACE

- A. Installation shall be as recommended by the manufacturer and shall be to the depths and widths indicated on the drawings.

- B. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, concrete edge restraints, playground equipment installation and other relevant work has been completed.
- C. Poured in place surfacing must be installed on a dry subsurface with no prospect of rain within the initial drying period and within recommended temperature range (40 degree Fahrenheit and rising) of the manufacturer.
- D. The contractor shall provide copies of testing procedures and results, performed by an independent testing source, which demonstrate compliance with the CPSC and ASTM guidelines. Per CPSC and ASTM F-1292 Critical Height testing procedures at 30, 72, and 120 degrees F, the installed surface shall pass the 150 G-max and 850 HIC test for a height at least equal to the highest fall height of equipment as installed within its zone.
- B. When installed, the system shall be handicapped-accessible and comply with the Civil Rights Restoration Act of 1987 and the Americans with Disabilities Act of 1990 (ADA). Surface must comply with Massachusetts Architectural Access Board accessibility requirements and ASTM F1951.
- C. Contractor shall provide a written five (5) year performance guarantee from date of substantial completion. The manufacturer shall provide a written guarantee for three (3) years from date of installation against decay and biochemical degradation calling for replacement of defective materials during the guarantee period. Contractor shall install system so as to comply with manufacturers' warranty requirements.
- D. Install material per manufacturer's specifications.

3.3 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 18 17
ENGINEERED WOOD FIBER SURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all labor, equipment, implements and materials required to furnish, install, construct and perform all paving operations complete as shown on drawings and specified herein.
- B. Work includes, but is not limited to the following:
 - 1. Grading and Compacting of Subbase
 - 2. Engineered Wood Fiber Surfacing
 - 3. Rubber Kick Mat
 - 4. Cleaning, Repair and Protection

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 03 30 00 – Site Cast-In-Place Concrete
 - 2. Section 11 68 00 – Playground Equipment
 - 3. Section 32 10 00 – Asphalt Paving
 - 4. Section 32 16 00 - Curbing
 - 5. Section 32 18 16 – Playground Protective Surfacing
 - 6. Section 33 41 00 – Storm Drainage Utilities
- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1.04 REFERENCES

- A. The following related items are included herein and shall mean:
 - 1. S.S.H.B. - Standard Specifications for Highways and Bridges, the Commonwealth of Massachusetts, Department of Public Works, latest edition.
 - 2. A.S.T.M. - American Society for Testing and Materials.
- B. American Society of Testing and Materials (ASTM)
 - 1. 355 Shock Absorbing Properties of Playing Surface Systems and Materials (GMAX)

2. F1292 Impact Attenuation of Surface Systems Under and Around Playground Equipment
3. F1951 Determination of Accessibility of Surface Systems Under and Around Playground Equipment

1.05 SUBMITTALS

- A. Submit Engineered Wood Fiber Surfacing and Rubber Kick Mat manufacturer's Product Literature including IPEMA certification, Specification Data and installation instructions.
 1. Provide one (1) sample for each product to Owner/Landscape Architect for approval.
 2. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951.
 3. Provide Manufacturer's Warranty for Owner's acceptance.
 4. Submit test results for impact attenuation in accordance with ASTM F 1292 Standard Specification and accessibility in accordance with ASTM F1951. Submit evidence of IPEMA (International Playground Equipment Manufacturer's Association) certification.
- B. Submit installer qualifications (Manufacturer-certified installer of system).
 1. Installers of the wood fiber and rubber mat system shall have five (5) years minimum experience and shall provide three (3) local references where installation can be inspected.
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.07 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no extra cost to the Owner.
- C. Substrates: Proceed with work only when substrate construction and penetrating work is complete. Maintain the sub-base in satisfactory condition and properly drained until surface improvement is placed.

1.08 GUARANTEE

- A. The Contractor shall deliver standard written manufacturer's guarantee in the Owner's name covering all materials and workmanship. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

1.09 QUALITY ASSURANCE:

- A. Surface Installer Qualifications: Company specializing in outdoor resilient surfaces in the USA and certified members of NPCAI. The applicator shall be approved and trained, with a minimum of five years' documented experience and have completed 5 public playgrounds in the past 5 years. Conditions of all surface substrates with respect to structural performance shall be evaluated and approved by the surface installer prior to application of surface system.
- B. Performance requirements
1. All safety surfacing within playground equipment use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F 1292 and IPEMA certified for the highest playing point of each piece of play equipment.
 2. Surfaces intended to serve as accessible routes of travel shall be firm, stable and slip resistant and shall be meet the requirements of ASTM F 1951 and ASTM F 1292
- C. Post-installation testing
1. Impact attenuation testing shall be performed by a National Recreation and Parks Association/National Playground Safety Institute (NRPA/NPSI) Certified Playground Safety Inspector (CPSI) and trained in the proper operation of the Triax test equipment.
 2. Impact attenuation testing shall be performed according to ASTM 1292 in presence of the owner within 30 days of installation. As a precondition of surfacing acceptance, the Contractor shall provide the testing results in writing. Up to 10 drop test locations will be required at each separate play area.
 3. If the surfacing does not meet the safety standards or impact attenuation performance requirements, the contractor will be required to bring the surfacing up to compliance within 30 days or less. The extent of failure and determination of replacement will be at the discretion of the Owner. Should they be found during or after installation, any violations of the C.P.S.C. Guidelines, ASTM, ADA or impact attenuation performance requirements shall be corrected to the satisfaction of the owner, any proposed corrective work shall be reviewed and approved by the Landscape Architect before corrective work begins.
 4. Impact attenuation requirements: **Gmax test results shall be less than 150 and HIC test results shall be less than 850.**
 - a. Please refer to the fall height zones of the playground equipment and the safety surfacing minimum depth required for said playground equipment. Actual depths shall be adjusted (thickened) as needed by contractor to accommodate the final Gmax and HIC requirements.

PART 2 - PRODUCTS

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 00 00 - EARTHWORK to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-grade infiltration rates shall be confirmed with in-place testing. A minimum of one test at each playground surfacing type shall be conducted. Tested infiltration rates shall be meet or exceed a minimum of five inches per hour (5"/hr). If infiltration rates fail to meet the minimum, remediation of the sub-grade material shall be required to bring the sub-grade infiltration rates into compliance or an under-drainage shall be installed.
- C. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 00 00 - EARTHWORK. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no additional cost to the Owner.

2.02 ENGINEERED WOOD FIBER SURFACING

- A. Furnish and install Engineered Wood Fiber Surfacing as indicated in the drawings and specified herein.
- B. Material shall be IPEMA certified and consist only of recently harvested North American hardwoods including Oak, Maple, Ash, Poplar, Hickory, Beech, Birch and Locust. All woods shall have been debarked and shall be free of soil, leaves, twig material and other contaminants which hasten decomposition. The moisture content shall be between 25% and 55% by weight. No chemical treatment or additives are allowed. Positively no recycled wood from pallets or waste wood is permitted due to the possibility of contamination and the risk of poor surface stability.
- C. The density of the material shall be from 18 lbs. per cubic foot to 23 lbs. per cubic foot. Wood fiber surfacing shall be randomly sized, approximately ten times longer than wide. The material shall meet the gradation requirements of ASTM C136.
- D. Hardwood fiber must meet or exceed C.P.S.C., A.D.A., C.S.A., ASTM F-1292-99, and ASTM F-1951 guidelines.
- E. Wood fiber must be wheelchair accessible as required by the Americans With Disabilities Act and have been tested to the guidelines of ASTM PS-83 or ASTM F-1951 for accessibility
- F. Provide sufficient amount of material to allow for compaction to depths indicated on the plans/details and as per manufacturer's recommendations.
- G. Filter fabric shall be provided that is 100% polyester, nonwoven, engineering geotextile fabric, Mirafi 140N or equal. Provide 12" overlap on all seams
- H. Filter fabric shall be provided that is 100% polyester, nonwoven, engineering geotextile fabric, Mirafi 140N or equal. Provide 12" overlap on all seams

2.03 RUBBER KICK MAT

- A. Furnish and install Rubber Kick Mats as indicated in the drawings and specified herein.
- B. Material used will be manufactured from recycled rubber. Dimensions of each mat are 72" x 88" x 1.5" thick. Mat edges shall be beveled, 90° or squared edges will not be acceptable. Mats shall meet the IPEMA impact rating for the associated playground equipment. Mat shall have an anchoring system to prevent displacement of the kick mat. Mat must meet the Americans with Disabilities Act (ADA) regulations. Rubber Mat color shall be Black.
- C. The Basis-of-Design on the rubber mats are TuffMat Resilient Wear Mat as provided by Zeager Bros, Inc. 4000 East Harrisburg Pike, Middletown, PA. 800-346-8524. www.zeager.com; or an approved equal.

PART 3 - EXECUTION

3.01 SUBBASE

- A. Prepare the subgrade in accordance with the drawings and per the manufacturer's recommendations.

3.02 ENGINEERED WOOD FIBER SURFACING

- A. Installation shall be as recommended by the manufacturer and shall be to the widths indicated on the drawings. Fiber depths shall be in accordance with the impact attenuation requirements noted by the associated playground structures.
- B. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, concrete edge restraints, playground equipment installation and other relevant work has been completed.
- C. The contractor shall provide copies of testing procedures and results, performed by an independent testing source, which demonstrate compliance with the CPSC and ASTM guidelines. Per CPSC and ASTM F-1292 Critical Height testing procedures at 30, 72, and 120 degrees F, the installed surface shall pass the 150 G-max and 850 HIC test for a height at least equal to the highest fall height of equipment as installed within its zone.
- D. When installed, the system shall be handicapped-accessible and comply with the Civil Rights Restoration Act of 1987 and the Americans with Disabilities Act of 1990 (ADA). Surface must comply with Massachusetts Architectural Access Board accessibility requirements and ASTM F1951.
- E. Contractor shall provide a written five (5) year performance guarantee from date of substantial completion. The manufacturer shall provide a fifteen year (15-yr) limited warranty from date of installation against decay and biochemical degradation calling for replacement of defective materials during the guarantee period. Contractor shall install system so as to comply with manufacturers' warranty requirements.

3.03 RUBBER KICK MAT

- A. Installation shall be as recommended by the manufacturer and shall be to the locations as indicated on the drawings.

3.04 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that

- cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
 - C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 18 23
RECREATIONAL COURT SURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this section includes, but is not limited, to the following:
 - 1. Grading and Compaction of Sub-base
 - 2. Heavy Duty Acrylic Resurfacer
 - 3. Asphalt Color Surfacing (All painted graphics)
 - 4. Cleaning, Repair and Protection

1.03 RELATED WORK

- A. Carefully examine all the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to the following:
 - 1. Section 32 12 00 – Asphalt Paving
 - 2. Section 32 14 00 – Unit Pavers
 - 3. Section 32 16 00 – Curbing
 - 4. Section 32 30 00 – Site Improvements
 - 5. Section 32 31 00 – Fencing
 - 6. Section 33 40 00 – Storm Drainage Utilities

1.04 SUBMITTALS

- A. Refer to individual items for additional submittal requirements.
- B. Provide manufacturer's product material information and system performance data along with material and system samples for each item specified in this Section for the Landscape Architect's review and approval prior to ordering materials.
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products and provide adequate protection against damage. Handle in strict compliance with manufacturer instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to chipping, staining, cracking and other damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.06 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Substrates: Proceed with work only when substrate construction and penetrating work is complete.

1.07 REFERENCE STANDARDS

- A. National Federation of State High School Associations (NFSHSA)
- B. International Amateur Athletic Federation (IAAF)
- C. National Collegiate Athletic Association (NCAA)

1.08 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS AND EXECUTION (Combined)

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 31 00 00 – EARTHWORK to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- A. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 31 00 00 – EARTHWORK. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected at no additional cost to the Owner.

2.02 ASPHALT PAVING

- A. Asphalt paving shall be of properly approved quality as specified under Section 32 12 00 – ASPHALT PAVING. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected at no additional cost to the Owner.

2.03 HEAVY DUTY ACRYLIC RESURFACER

- A. Heavy Duty Acrylic Resurfacer shall be applied on asphalt in areas without color surfacing. The heavy duty acrylic resurfacer shall meet the following requirements
 - a. Shall not be hazardous and free of lead, mercury, asbestos and formaldehyde
 - b. Shall fill and smooth the asphalt pavement with even color
 - c. Shall contain resin blend to withstand vehicular traffic
 - d. Color shall be dark grey

- e. Shall have 3 coats applied
 - f. Contractor shall follow manufacturer's recommendation and process (weather, resting time period between each coat) for acceptance
- B. Basis of Design for Heavy Duty Acrylic resurfacer is "Novaplay Base Coat" manufactured or supplied by Nova Sports USA (www.novasports.com)
- C. Acceptable manufacturers must meet or exceed Basis of Design:
- a. Pattern Paving
 - b. California Sports Surfaces
 - c. StreetBond by GAF
- D. Sand shall be clean, dry sand with 100% passing through a #80 mesh sieve.
- E. Water shall be clean and potable.
- F. Dilution: 2 parts acrylic resurfacer to 1 part water. Add 10-15 lb sand (80-100 mesh) per gal of acrylic resurfacer.

2.04 ASPHALT COLOR SURFACING (ASPHALT GRAPHICS)

- A. Provide and apply as shown on the drawings a high quality "vehicular rated" water-borne acrylic coating incorporating an epoxy additive to increase the wet abrasion resistance properties of the film. The product shall have the general specifications
- 1. Resist ultraviolet degradation for long-term protection and color stability.
 - 2. Provide durable, non-skid texture for exterior asphalt surface.
 - 3. Resist wear and abrasion through the incorporation of an epoxy additive.
 - 4. Protect against asphalt degradation by sealing in the vital oils of the asphalt mix.
 - 5. No toxic fumes or objectionable odor. Must meet VOC requirements.
- B. Basis of Design is product "STREETCOAT Epoxy Modified Resin, Traffic Coating" by Pattern Paving (www.patternpaving.com) or approved equal that meets requirements and provide custom color. Contact: Gerry Oliver (gerry@patternpaving.com ; 704-996-7248)
- C. Approved Equal must meet the following composition and performance characteristics as described below.
1. Table 1: Material Composition

CHARACTERISTICS	REQUIREMENT
ASTM D2369 % Solids by weight	> 76%
ASTM D26297 % Solids by volume	> 57.9%
Weight per gallon	13.9 lbs/gal 6.3kg / 3.78 litre
ASTM D-3723 % Pigment by weight	> 62%
Boiling Range	212°F - 100°C
ASTM D-3278 Flash Point	>230°F - 110°C
Specific Gravity (H2O=1).....	1.67
Vapor Density	Heavier than air

Hazardous Ingredients	none
Mix Ratio (Coating : LiquidTint) gal/pints	5gal / 1pint 18.92 Litre / .473 Litre
Wet mil thickness per coat	10 to 15 thousands/inch
Recommended minimum number of coats.....	3

Table 2: Performance Requirements

TEST	REQUIREMENT
Dry Time (to re-coat) @ 50°F (10°C).....	120 min
Dry Time (to re-coat) @ 90°F (32°C).....	30 min
85% Day Cure (to permit traffic) @ 80°F (26°C).....	2 hours
Gloss: ASTM D523 (85° Gardner).....	<3
Hardness: ASTM D3363	3H pencil
Shore Hardness: ASTM D2240	63 Type D
ASTM 2486 Gasoline Scrub Resistance..... To 50% of coating thickness (30 mils).....	>5000 cycles to max loss of 50% coating thickness
ASTM 2486 Motor Oil Scrub Resistance..... To 50% of coating thickness (30 mils).....	>5000 cycles to max loss of 50% coating thickness
Temp. limits for service (of cured material)	-35°F to 145°F -37°C to 63°C
ASTM G-155 Color Stability..... QUV 2,000 hrs (CIE units).....	Old Brick Color ΔE < .5
Pedestrian Friction ASTM E303 British Pendulum.....	88 BPN Dry 72 BPN Wet
Mandrel Bend Test ASTM D522.....	>3/16" Pass >.476cm Pass
Water Absorption ASTM D570 7day.....	<9%
VOC Content ASTM D3960.....	<.67oz/1.06 qt <19 grams/liter
Taber Abrasion Dry H-10 ASTM D4060 1day cure.....	.006oz/1000cycles .17g/1000 cycles
Taber Abrasion Wet H-10 ASTM D4060 7day cure.....	.015oz/1000cycles .43g/1000 cycles
Adhesion to Asphalt ASTM D4541 >245 lb./sq.in.....	Cohesive Asphalt Failure prior to Adhesion Failure

- D. Approved Equal must meet the following composition and performance characteristics as described below.

- E. There will be minimum of 3 coats applied for all the asphalt color surfacing graphics.
- F. The final color selection will be specified and approved during the submittal process by the Landscape Architect

2.05 CLEANING, REPAIR AND PROTECTION

- A. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- B. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- C. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

SECTION 32 31 00
CHAIN LINK FENCE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section includes, but is not limited to the following:
 - 1. Grading and Compaction of Sub-base
 - 2. Concrete Footings for Fencing
 - 3. Black Vinyl Coated Chain Link Fence
 - 4. Cleaning, Repair and Protection

1.03 RELATED WORK

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this Section. Other specification sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 129300 – Site Furnishings and Improvements
 - 2. Section 311000 – Site Clearing and Prep
 - 3. Section 312300 - Excavation Filling and Grading
 - 4. Section 321216 - Asphalt Paving
 - 5. Section 321313 – Concrete

1.04 SUBMITTALS

- A. Refer to individual site improvements for additional submittal requirements.
- B. Provide manufacturer's product material information and system performance data along with material and system samples for each item specified in this Section for the Landscape Architect's review and approval prior to ordering materials.
- C. The General Contractor shall verify by field inspection that all items within this section conform to the specified requirements and approved submittals prior to installation.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products adequately protected against damage. Handle in strict compliance with manufacturer's instructions and recommendations and store off the ground. Protect from all possible damage including, but not limited to, chipping, staining, cracking and other damage. Cracked, chipped, or stained units will be rejected and shall not be utilized in this work. Sequence deliveries to avoid delays, but minimize on-site storage.

1.06 COORDINATION

- A. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work as necessary to assure the steady progress of the work of this Contract.
- B. Substrates: Proceed with work only when substrate construction and penetrating work is complete.

1.07 REFERENCE STANDARDS

- A. Chain Link Fence Manufacturers Institute (CLFMI).
- B. American Society of Testing and Materials (ASTM).
- C. ASTM F1184 Specification for Industrial and Commercial Horizontal Slide Gates

1.08 GUARANTEE

- A. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTARY GENERAL CONDITIONS, the Contractor shall provide the manufacturers' standard written warranty for each product within this specification. All of these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS & EXECUTION (Combined)

2.01 GRADING AND COMPACTION OF SUB-BASE

- A. Do all necessary grading in addition to that specified under Section 312300 – Excavation Filling and Grading to bring subgrade or foundation after final compaction to required grades and sections to obtain a foundation of uniform bearing surface. In absence of specific requirements, compact foundation by such means as will provide firm base and insurance against settlement of superimposed work.
- B. Sub-base preparation, including material, shall be of properly approved quality as specified under Section 312300 – Excavation Filling and Grading. Start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied. Any defects in work resulting from such conditions shall be corrected under this Section, at no additional cost to the Owner.

2.02 CONCRETE FOOTINGS FOR FENCING ITEMS

- A. Construct concrete footings where shown on the Drawings.
- B. Concrete for footings shall be 4,000 lb. concrete as specified in Section 03 30 00 –CAST-IN-PLACE CONCRETE.
- C. Place concrete on moist subgrade or against prepared footings in continuous operation between transverse joints or individual sections. Vibrate all concrete. Do not place concrete in freezing temperatures or on frozen base.

1.

2.03 BLACK VINYL COATED CHAIN LINK FENCE

- A. Submittals:
 - 1. Shop Drawings: Supply shop drawings at an approved scale for location, installation and erection of all components of the chain link fence.

2. Product information: Provide manufacturer's product data showing installation and limitations in use. Supply Certificates of Compliance for all materials required for fabrication and installation.
3. Material Selection and Samples: Submit samples showing the material size, gauge and finish for all components required for construction, including but not limited to:
 - a) A 12"x12" sample of fence fabric.
 - b) A 12" section of each type of fence pipe required.
 - c) Provide 1 of each type of fitting required.
 - d) Provide a 6" sample of fabric tie material.

B. Scope:

1. This specification covers colored chain link fence, including chain link fabric, framework, and fittings. Fence heights / gate heights and widths shall be shown on the drawings.
- C. PVC Coating: Fence fabric and framework shall be thermally-fused vinyl coating over galvanized steel. "A Bonded or extruded and glued" fabric will not be accepted.
- D. Color: All fence material including fabric, framework, fittings, privacy slats and hardware shall be black.
- E. Fabric: Fabric for all fences shall be a 2" diamond mesh unless otherwise noted. Fabric shall be #6 gauge core wire unless otherwise noted (0.192" nominal wire diameter) with a minimum breaking strength of 2170 pounds, thermally fused in accordance with ASTM F668-2b. The weight of the zinc coating on the steel wire shall be 0.3 oz. per square foot minimum. Chain link fabric shall be color matched with framework materials. Fabric shall be knuckled at both selvages.
- F. Framework: Shall consist of terminal posts, line posts, top rail, bottom rail, mid rail, truss rods at end and corner posts and gate frames.
- G. Posts and rails shall be steel pipe, Type 1: ASTM F 1083, standard weight, schedule 40, minimum yield strength of 25,000 psi, sizes as indicated below. Before color is applied, all materials shall be given a minimum 1.8 ounce per s.f. coating of zinc. PVC-coated finish shall be applied in accordance with ASTM F 1234, apply supplemental color coating of 12 mils (0.254-0.356 mm) of thermally fused PVC.

1. Sizes of Framework:

1) Fences less than 5' Height

Post or Rail	Outside Diameter	Pounds/Foot
End Corner & Pull Post	2.375"	3.65
Line Post	1.900"	2.72
Top and Bottom Rail	1.660"	2.27

2. Fences greater than 5' Height but less than 8' Height

- 1) Provide mid rail braces* between all end/corner posts and adjacent line posts at all fences 5' – 8' in height.

Post or Rail	Outside Diameter	Pounds/Foot
End Corner & Pull Post	2.875"	3.65

Line Post	2.375"	2.72
Top and Bottom Rail	1.660"	2.27
Continuous Mid Rail	1.660"	2.27

3. Fences equal to or greater than 8' Height:

- 1) Provide continuous mid rails* for all fences 8'-12' in height.

Post or Rail	Outside Diameter	Pounds/Foot
End Corner & Pull Post	4.0"	9.10
Line Post	2.875"	5.79
Top and Bottom Rail	1.660"	2.27
Continuous Mid Rail	1.660"	2.27

- H. Top rail couplings 6-inch minimum in length shall be spaced at maximum 20-foot centers and 9-gauge minimum fabric tie wires shall be spaced at 18-inch maximum centers.

I. Accessories:

1. Chain link fence accessories: ASTM F 626, Provide items required to complete fence system. Galvanize each ferrous metal item in accordance with ASTM A 153 and finish to match framing (Black Vinyl Coating).
2. Post Caps: Formed steel, weather tight dome-shape closure cap. Provide one cap for each post. Caps shall be affixed to the post securely so as to prevent removal.
3. Stretcher Bars: One-piece lengths equal to 2-inches less than full height of fabric with a minimum cross section of 3/16 inch x 3/4-inch. Provide stretcher bars where chain link fabric meets terminal posts.
4. Tie Wire: 9-gauge vinyl coated galvanized steel wire for attachment of fabric to line posts.

- J. General: Certain components not adaptable to the here in specified coating process may be color coated by other means. All fittings shall be pressed steel or malleable iron. Tie wires shall be minimum 9-gauge PVC coated steel or 6-gauge aluminum. Line and terminal posts to be of sufficient length to be set to the full depth of concrete footing indicated on the Drawings. Maximum spacing of line posts shall be 10-feet.
1. Each fence panel shall be constructed such that it will pass the following test. Deflection of the fence fabric shall be no greater than 2 inches when a force of 30 pounds is applied in the center of a framed panel, perpendicular to the plane of the fence fabric. Fabric shall return to original position true to the plane of the fence when force is released.

- K. Existing posts to remain shall be straightened and repainted as necessary.

2.04 CLEANING, REPAIR AND PROTECTION

- A. Straighten and refurbish existing poles as needed.
- B. Repair minor damage to eliminate all evidence of repair. Remove and replace work that cannot be satisfactorily repaired.

- C. Provide temporary protection to ensure that the work will be without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protections and clean as necessary immediately before final acceptance.
- D. Upon completion of the work and before acceptance, the Contractor shall remove and dispose of in an approved manner all surplus materials, rubbish, etc. which the Contractor may have accumulated during the course of the work and shall leave the site in a clean and orderly condition. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

END OF SECTION

**SECTION 32 90 00
PLANTING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:
 - 1. Planting trees, shrubs, groundcovers, and perennials
 - 2. Planting maintenance
 - 3. One-year plant guarantee period for all plants
 - 4. Inspection and acceptance
 - 5. Pruning and maintenance of existing trees to remain
 - 6. Suspended Paver Tree Grate
 - 7. Rootball Fixing System
 - 8. Cleaning and protection

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 16 00 – Asphalt Paving
 - 6. Section 32 13 13 – Concrete
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 91 00 – Loam and Planting Preparation
 - 9. Section 32 92 00 – Turf and Grasses
 - 10. Section 33 40 00 – Storm Drainage Utilities
- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.
 - 1. The planting subcontractor shall become fully acquainted with the nature and requirements of the project including the location of all underground utilities prior to starting the work of this Section.

1.04 REFERENCES

- A. The following standards shall apply to the work on this Section.

1. American National Standards Institute (ANSI):
Z60.1 American Standard for Nursery Stock, latest edition, published by American Association of Nurserymen, (AAN).

1.05 SUBMITTALS

A. Material Samples and testing:

1. Provide full analysis of existing on-site loam, and off-site loam source from a laboratory that has been approved in writing by the Architect. Sampling and testing shall be as specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.
2. Planting mulch: submit one gallon-sized Ziploc bag.
3. Provide manufacturers' certified analysis for soil amendments and fertilizers.

B. Tree Grate and rootball fixing system product data sheet and shop drawings.

1.06 REGULATORY REQUIREMENTS

- A. Strictly comply with all applicable codes, regulations and requirements having jurisdiction.
- B. All fertilizer and pesticide applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Owner's Project Representative at least two (2) weeks prior to scheduled date of application.

1.07 QUALITY ASSURANCE

- A. Subcontract planting work to a single landscape construction company specializing in this work. All work shall be performed by experienced landscape professionals familiar with planting procedures and under the full-time supervision of a qualified foreman. The General Contractor shall notify the Architect in writing upon the selection of a landscape subcontractor and arrange for a pre-construction meeting between the Architect, General Contractor, and Subcontractor. Such meeting shall seek to establish the proposed schedule, source of plants, consideration of substitutions and general review of procedures.
- B. Inspection of Plant Materials: Plant materials are subject to inspection and approval upon delivery to the project site. Certificates of inspection of plant material shall be furnished as may be required by Federal, State and other authorities. No plants shall be planted until required inspections have been made and the plants approved.
- C. Label at least one tree and one shrub of each species within each plant grouping with a securely attached waterproof tag bearing legible designation of botanical and common name.

1.08 PLANTING SEASONS

- A. Complete landscaping work as quickly as possible as portions of the site become available for this work. Work only within seasonal limitations for proper planting as follows:

Type of Plant Material	Spring Season	Fall Season
Evergreen Trees & Shrubs	April 15 to June 1	Aug. 15 to Oct. 1
Deciduous Trees & Shrubs	Shall be planted in a dormant condition.	

- B. Planting performed outside of these seasonal limitations will not be accepted unless approval is obtained in writing from the Architect. Any approved work outside of these seasonal limitations pertains only to the work to be performed in the season of the year requested.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Packaged Materials: Deliver packaged materials in manufacturer's original unopened containers showing weight, analysis and name of manufacturer. Comply with manufacturer's instructions and recommendations for storage and handling. Protect all materials from damage, deterioration, injury and theft while stored at the site.

1.10 EXAMINATION OF CONDITIONS

- A. All areas to be planted shall be inspected by the Contractor prior to starting work and any incorrect grading or inadequate drainage shall be reported to the Architect prior to beginning work.

PART 2 - PRODUCTS

2.01 LOAM

- A. Loam for planting shall be approved, specified, provided, and installed under the work of Section 32 91 00 Loam and Planting Preparation, and that has been pH adjusted according to particular planting applications and improved through the addition of organic material as directed under this Section.
- B. Planting loam mix for groundcover, perennial and bulb planting shall have a pH value of 5.5 to 6.5, which has been thoroughly premixed with organic material in the proportions of one part organic matter (humus or compost), with 5 parts of approved loam. Organic material shall be specified, provided, and installed under Section 32 91 00, Loam and Planting Preparation.

2.02 SOIL ADDITIVES

- A. Soil additives shall be specified, provided, and installed under the work of Section 32 91 00 Loam and Planting Preparation.

2.03 STANDARD OF PLANTS

- A. The Contractor shall furnish all plants shown on the Contract Documents. No substitutions will be permitted, without written approval by the Landscape Architect. Furnish plants which have been nursery grown in accordance with the American Standard for Nursery Stock of the American Nursery and Landscape Association (ANLA) and ANSI Z60.1 - latest edition, and which have been grown under climate conditions similar to those in the locality of the project. All plants shall conform to the varieties, sizes and quantities specified on the plans and typical of their species. They shall be free from insects, insect eggs, scale and/or disease. The root system of each shall be well provided with fibrous roots. Plants shall have a sound, healthy, well-formed upper growth with straight trunks, well-branched and densely foliated when in leaf. Plants shall be legibly tagged with its proper name for purposes of identification of plant material during planting.
 - 1. Measurements: Height and spread dimensions specified refer to the main body of the plant and not from branch or root tip to tip. Measure the caliper of trees up to 4 inches at 6 inches above the ground level. Measure trees larger than 4 inches 1 foot above ground level.

2. Plants larger than specified in the plant list may be used if approved by the Architect, but use of such plants shall not increase the contract price. If the use of larger plants is approved, the spread of roots or ball of earth shall be increased in proportion to the size of the plant.

2.04 BARK MULCH

- A. Bark Mulch: for planting beds shall be a 100% pine bark product free from lumps, dirt, or deleterious materials. Bark shall be substantially free from wood fibers. No pieces of bark shall exceed three (3) inches in any dimension, or be thicker than 1/4 inch. Mulch shall have been aged for a minimum of six months, and not longer than two years. Bark shall be no more than two years old. All plant beds shall receive a two to four inch layer of mulch, not to exceed four inches.

2.05 WATER

- A. Water: shall be furnished by the Contractor from a legal off-site source via water truck and be suitable for irrigation, free of toxic ingredients. Sources of water at or near the site that are made available to the Contractor are a convenience to the Contractor. Limitations of site water sources shall be supplemented by off-site sources at the Contractor's expense to meet the maintenance requirements of this Section. Any municipal fees associated with providing water for this work shall be borne by the Contractor.
 1. Watering Equipment: The Contractor shall furnish sufficient watering equipment to distribute water evenly with complete coverage daily to all seeded areas.
 2. All new and transplanted trees shall be furnished and installed with 20 gallon, slow release watering Treegator bags or approved equal. Manufactured by Spectrum Products, Inc., Youngsville, NC, phone 1-800-treegator.

2.06 ANTIDESICCANTS

- A. Antidesiccants shall be emulsions or other materials which will provide a protective film over plant surfaces permeable enough to permit transpiration and specifically manufactured for that purpose. Antidesiccant shall be "Wilt-Pruf" available from Nursery Specialty Products, Inc., New York, N.Y. or approved equal, and mixed and applied according to the manufacturer's instructions.

2.07 TREE ANCHORING MATERIALS

- A. Stakes: For supporting small trees under 3" caliper shall be of sound wood uniform in size, reasonably free of knots, and capable of standing in the ground at least two years. Stakes shall be 2"x 4," not less than eight and one half feet in length and stained dark brown.. All trees 3" caliper or over shall be supported by guying cable as per planting detail.
- B. Arbor Ties: Utilize Arbortie by Deeproot, or approved equal, when staking and guying plant material.
- C. Rootball Fixing Systems: Rootball fixing systems shall be Platipus D-MAN System with Platimats and galvanized wire (www.platipus0anchors.us) or approved equal. Contractor shall select appropriate anchoring systems sized to match tree caliper.

2.08 SUSPENDED PAVER TREE GRATE

- A. The standard of quality, design and function required is based on the suspended pavement tree grate manufactured by Ironsmith, Inc., 41-701 Corporate Way, Unit 3, Palm Desert, CA 92260

(800) 338-4766. Model #: 5224, 60" square galvanized steel paver suspension system in halves. With Expandable cast iron trim ring with 16" inch tree opening.

- B. Additional acceptable manufacturers include:
 - 1. WunderCovers, Inc., Lake Tahoe, NV, 775-400-2883
 - 2. Citygreen USA, 515 S. Flower Street, 36th Floor, Los Angeles, CA 90071, (+1) 888 999-3990
 - 3. Approved equal
- C. SUMITTALS: Contractor shall submit set(s) of drawings of tree grates and frames for review by architect prior to purchase and installation.
- D. QUALITY: Manufacturer must have 5 years of experience in fabricating suspended pavement systems for use in tree planting areas in pedestrian spaces.
- E. WARRENTY: Tree grates and frames shall be warranted by the Manufacture against defects in materials and workmanship for a minimum of five (5) years
- F. MATERIAL: Suspended paver type tree grates shall be manufactured from standard steel shapes to ASTM A36 and expanded metal grating 3# to ASTM A569/569M. If required, Tubing to ASTM A500. Units shall be manufactured true to design and all components shall fit together in a satisfactory manner. Grates are to be of uniform quality, flat and free from distortion. Finish shall be hot-dipped galvanized.
- G. INSTALLATION: Install grates where indicated on plans per details on plans and Manufacturer's instructions. Suspended pavement system footings shall be flat and leveled so that grates do not rock or appear unstable before unit pavers are set. Footings are to be set to ensure that unit pavers over the paver suspension system are flush and level with the surrounding areas. Cover suspended pavement system with permeable landscape fabric before setting unit pavers to permit sanding joints. Cut unit pavers to fit around tree opening ensuring a secure fit against suspended pavement system opening stop.

2.09 TREE WRAPPING MATERIALS

- A. Wrapping Material: shall only be as directed by the Landscape Architect. First quality, heavy waterproof crepe paper manufactured for this purpose. It shall consist of two layers of 30 pound or heavier craft paper with an asphalt coating between, similar to and equal to the "Grizzly Bear" tree wrapping paper, as manufactured by the Ludlow Corporation, Needham, MA or approved equal.

PART 3 - EXECUTION

3.01 PLANTING

- A. All plant roots and earth balls must be kept damp and thoroughly protected from sun and drying winds at all times from the beginning of the digging operation, during transportation, and on the ground until the final operation of planting.
- B. Prior to spreading loam, subgrades shall have been tested to determine if they are too compact to drain water as specified.

- C. Plant material Selection: at least one month prior to the expected planting date, the Contractor shall request that the Landscape Architect select and tag plants to be planted as specified. The Contractor shall pay for the transportation, subsistence and overnight accommodations, if necessary, for the Landscape Architect's representative during the period of time required to select and tag the plant material.
1. The Contractor shall be responsible to certify the availability of quality plants in specified sizes from his/her sources of supply prior to requesting that the Landscape Architect make plant source inspections. In the event that plants at the inspection location are found to be unavailable or of insufficient size, the Contractor shall be liable to reimburse the Owner for all costs of the Landscape Architect's hourly services which are incurred during unproductive inspection trips.
 2. Unless specifically designated otherwise, a representative of the Contractor shall accompany the Landscape Architect on all plant material selection field trips.
 3. Representative samples only of shrubs, perennials and groundcover plants may be tagged or marked for approval as an "Approved Typical Sample" and shipped to the site. Any shrub or groundcover plant that arrives at the construction site that does not meet the Approved Typical Sample will be rejected by the Landscape Architect.
 4. Inspection and approval of plants at the source shall not impair the right of subsequent inspection and rejection upon delivery to the site, or during the progress of the work if the Landscape Architect finds that plants do not meet the requirements of the PLANT LIST or this Contract, have declined noticeably due to handling abuse, lack of maintenance, or other causes. Cost of replacements, as required, shall be borne by the Contractor.
- D. Contractor shall located all existing underground utilities of the proposed planting and notify the Architect of any conflicts prior to digging.
- E. Locations for all plants shall be staked-out on the ground and approved by the Architect before any excavation is made. Adjustments in locations shall be made as directed by the Architect. Planting shall be in accordance with the planting details on the Drawings.
- F. The Contractor shall take special care to insure that the plant material is not planted too deeply by removing burlap and soil mounded around the base of the plant, at the top of the rootball, to expose the trunk flare. A measurement shall be taken from the trunk flare to the bottom of the root ball. This measurement shall be the depth of the planting hole.
- G. The plants shall be set at the center of the holes with trunk flare level to, or 1" – 2" above, finish grade. Once plant is set in planting pit, the Contractor shall remove the top 12" minimum, of wire basket and all visible rope and burlap.
- H. Hole shall be backfilled in layers of loam not more than nine inches and each layer watered sufficiently to settle before the next layer is put into place. Do not place any subsoil, sod or waste materials in planting hole.
- I. Each tree and shrub shall be pruned in accordance with National Arborist Association Standards to preserve the natural character of the plant. Remove all tags, labels and dead or broken branches.
- J. Staking of newly planted trees shall be performed directly after they are planted. Trees of 3-inch caliper or under, require staking only as needed to hold the tree plumb. All trees of 3-inch caliper and over shall be staked. Support ties shall allow tree to move and sway, but be able to

return the trunk to a plumb and true position. Contractor shall adjust staking as frequently as needed during the maintenance period.

- K. A 2 – 4 inch settled layer of bark mulch shall be applied over the entire area of the plant beds. Plantings installed over three months prior to the date of substantial completion shall be weeded and replenished with fresh mulch to specified thickness prior to acceptance.
- L. Provide a soil saucer equal to the diameter of the hole around each tree. Particular attention shall be made to create saucers at sloped areas that contain water around the base of the plant. Soil saucers shall be repaired and maintained as needed to perform effectively during the maintenance period.
- M. Plants shall be watered at a rate of 3–5 gallons per inch of caliper twice within the first twenty-four (24) hours of the time of planting.

3.02 MAINTENANCE

- A. Trees, Shrubs, Perennials, and Groundcover Plantings:
 - 1. The Contractor shall maintain plantings until the date of substantial completion or until the date of acceptance, whichever is later.
 - 2. Maintenance shall begin immediately after each plant is planted and shall include watering, weeding, pruning, pest control, removal of dead materials and otherwise maintaining plants. Correct defective work as soon as possible after it becomes apparent and weather and season permit. Reset settled plants to proper grade and position, restore planting saucer, and remove dead material. Repair soil saucers around trees and replenish bark mulch to meet the specified thickness as needed throughout the maintenance period.
 - 3. Watering: The Contractor shall include in his base bid costs for weekly watering of all plant areas for the entire first growing season. The required watering frequency will vary depending on temperature and natural rainfall. The Contractor shall respond to adverse weather conditions in a timely manner to maintain the moisture level in the soil necessary for proper plant establishment. Plants shall be watered at a rate of 3-5 gallons per inch of caliper. Slow release watering bags shall be filled weekly during this period. Plants subjected to drought stress during the required maintenance period may become unacceptable as determined by the Architect and require replacement at no additional cost to the Owner.
 - 4. Anti-desiccant: Treat plants subject to desiccation at the time of planting and again prior to winter according to the manufacturer's recommendations.
 - 5. During the maintenance period, any decline in the condition of plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and/or horticulturalists to inspect plant materials and to identify problems and recommend corrective procedures. The Landscape Architect shall be immediately advised of such actions. Inspection and recommendation reports shall be submitted to the Architect.

3.03 ACCEPTANCE

- A. Upon completion of planting work per Construction Phase, the Contractor shall request in writing that the Landscape Architect formally inspect the planting work. The General

Contractor, Owner, and landscape Architect shall walk all areas of completion to determine date of turnover to the Owner.

- B. Following the correction of all Punch List deficiencies, the Contractor shall request in writing that the Landscape Architect formally inspect the planting work. If plant materials and workmanship are acceptable, the Landscape Architect will issue a written Certificate of Final Acceptance to the Contractor.

3.04 PLANT GUARANTEE

- A. The date of the Certificate of Final Acceptance shall establish the commencement of the required one-year guarantee and establishment period for planting work.
- B. At the end of the guarantee and establishment period, a final inspection will be held to determine whether any plant material replacements are required. Plants found to be unacceptable shall be removed promptly from the site and replaced.
- C. All replacements shall be plants of the same kind and size originally specified. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.

3.05 PRUNING AND MAINTENANCE OF EXISTING TREES TO REMAIN

3.06 CLEANING AND PROTECTION

- A. During operations, keep pavements clean and work area in an orderly condition. Protect all plantings from damage by other contractors and trades and trespassers. After completion of the work, the Contractor shall remove all debris, materials, rubbish, excess dirt, etc. from the site and dispose of them in a legal manner. The premises shall be left clean and presentable to the satisfaction of the Architect.

END OF SECTION

SECTION 32 91 00
LOAM AND PLANTING PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.2 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:

1. Loam from off-site, if on-site loam is insufficient.
2. Sampling and testing of on-site and off-site loam
3. Sand Based Structural Soils (SBSS)
4. Sand
5. Modifying, screening, placing, spreading and grading of loam
6. Fine grading
7. Erosion control matting
8. Inspection and acceptance
9. Cleaning and protection

1.3 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:

1. Section 11 68 00 – Playground Equipment
2. Section 12 93 00 – Site Furnishings
3. Section 31 10 00 – Site Clearing and Preparation
4. Section 31 23 00 – Excavation Filling and Grading
5. Section 32 16 00 – Asphalt Paving
6. Section 32 13 13 – Concrete
7. Section 32 18 16.13 – Playground Protective Surfacing
8. Section 32 90 00 – Planting
9. Section 32 92 00 – Turf and Grasses
10. Section 33 40 00 – Storm Drainage Utilities

- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM):
D 75 Practice for Sampling Aggregates
D 422 Test Method for Particle-Size Analysis of Soils

D698-00a	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³)
D1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10-lb rammer and 18-in. drop

- B. A.O.A.C.: Association of Official Agricultural Chemists.

1.5 SUBMITTALS

- A. At least 30 days prior to ordering materials, the Contractor shall submit to the Architect representative samples, certifications, manufacturer's product data and certified test results for materials as specified below. No materials shall be ordered or delivered until the required submittals have been reviewed and approved by the Architect. Delivered materials shall closely match the approved samples. Approval shall not constitute final acceptance. The Architect reserves the right to reject, on or after delivery, any material that does not meet these Specifications.
- B. Existing On-Site loam: Sample and test existing on-site loam. The Contractor shall sample the existing loam soils of the construction site in the following manner:
1. The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard on-site stockpile of existing loam for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes for securing samples from stockpiles.
 2. Preparation of Samples: Contractor shall place these soil slices into a large, clean plastic container and mix thoroughly. Contractor shall take one cup of soil mixture and dry it at room temperature (do not dry samples in an oven or on a stove or radiator). Once soil is dry, place soil in sandwich size zip-type plastic bag and close it tightly. Label each sample on outside of bag, identifying sample by soil type and acre. Provide an approved site plan showing locations of stockpiles cross referenced to soil samples and test results.
- C. Loam from off-site, if on-site loam is insufficient: The Contractor shall provide a one cubic foot representative sample per each 1,000 cubic yard proposed stockpile of loam borrow for testing. All stockpile sampling shall be per ASTM D 75 and Appendixes for securing samples from stockpiles.
- D. Testing will be at the Contractor's expense. Contractor shall deliver all samples to testing laboratories via overnight courier and shall have the testing report sent directly to the Architect. Perform all tests for gradation, organic content, soil chemistry and pH by UMASS Soil and Plant Tissue Laboratory, West Experiment Station, North Pleasant Street, University of Massachusetts, Amherst, MA 01003, (413) 545-2311. Testing reports shall include the following tests and recommendations.
1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.
 2. Percent of organics shall be determined by the loss on ignition of oven-dried samples. Test samples minus #10 material shall be oven-dried to a constant weight at a temperature of 450 degrees Fahrenheit (752 degrees Centigrade).
 3. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, extractable Aluminum, Lead, Zinc, Cadmium, Copper, Soluble Salts, and pH and buffer pH. A Conductivity Meter shall be used to measure Soluble Salts in 1:2 soil/water (v/v). Except where otherwise noted, nutrient tests shall be for available nutrients.

4. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish lawn and planting work as specified.
- E. Compost: Submit supplier's certification of contents.
- F. Limestone: Submit supplier's certification that the limestone being supplied conforms to these Specifications.
- G. Acidulant: Submit supplier's certification that the acidulant being supplied conforms to these Specifications.
- H. Fertilizer:
 1. Submit product data of seeding/sodding and planting fertilizer and certificates showing composition and analysis. Submit fertilization rates for fertilizer product based upon soil testing, analysis, and recommendations as specified, performed and paid for under in this Section.

1.6 REGULATORY REQUIREMENTS

- A. Strictly comply with all applicable codes, regulations and requirements having jurisdiction.
- B. All fertilizer applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Owner's Project Representative at least two (2) weeks prior to scheduled date of application.

1.7 EXAMINATION OF CONDITIONS

- A. The Contractor and any sub-Contractor responsible for the execution of the Work of this Section, shall review the subgrades and elevations to verify that the subgrades have been prepared as required by the Contract Documents, prior to proceeding with the spreading of the planting loam. Carefully review the requirements of this Section, to understand the requirements of percolation testing, compaction, slope and absence of debris of the subgrade prior to spreading of the loam borrow.
- B. The Contractor shall be solely responsible for judging the full extent of work requirements involved, including but not limited to sampling and testing of all materials prior to final planting installation.

1.8 DEFINITIONS

- A. The following definitions shall apply to the work of this Section.
The following size distributions of mineral particles by diameter and sieve size shall apply to the following conventional names of soil types:

<u>Conventional Name</u>	<u>Retained on U.S. Sieve No.</u>	<u>Diameter (mm)</u>
Very coarse sand	#18	1 - 2
Coarse sand	#35	0.5 - 1
Medium sand	#60	0.25 - 0.5
Fine sand	#140	0.10 - 0.25
Very fine sand	#270	0.05 - 0.10
Silt	by hydrometer	0.002 - 0.05
Clay	by hydrometer	Less than 0.002

PART 2 - PRODUCTS

2.1 LOAM

- A. Loam: The Contractor shall provide additional loam as necessary to complete the work of this Section from off-site sources if there is not sufficient material on site suitable to complete the Work. The Contractor shall submit samples and an analysis from each proposed source of material. Provide loam that is fertile, friable, natural loam reasonably free from subsoil, clay lumps, brush, litter, roots, stones and other foreign materials.
- B. Loam shall be one of the following sandy loams; "coarse sandy loam", "sandy loam", "fine sandy loam", determined by mechanical analysis ASTM D-422 and based on the USDA Classification System, and as defined in this Section. It shall be uniform in composition, without admixture of subsoil. It shall be free of stones greater than one and one-quarter inches, lumps, plants and their roots, debris and other extraneous matter.

C. Textural Classification:

<u>Millimeter</u>	<u>Percent Passing by Weight</u>	
	<u>Maximum</u>	<u>Minimum</u>
2	-----	100
1	100	80
0.5	87	67
0.25	78	48
0.10	68	30
0.05	55	22
0.02	7	2

Soil test shall include breakdown of sand and subfractions from very course to very fine.

1. One hundred percent by weight shall pass a one-inch (1") sieve opening, and the maximum retained on the 1/4" sieve shall be 20 percent by weight of the total sample.
 2. On-site and off-site loam shall be screened to achieve above specified sieve analysis.
 3. The contractor should anticipate amending the onsite loam for conformance to the requirements as stated herein.
- D. Organic content and pH: loam shall contain not less than 6% or more than 10% organic matter of the sample that passes a 1/4" sieve when determined by the wet combustion method on a sample dried at 105 degrees C. The pH value shall be within a range of 5 to 6 for loam to be used in planting areas and within a range of 6 to 7 for loam to be used in seeding areas.
1. Loam borrow shall be pH adjusted for particular planting applications and shall be adjusted prior to delivery to the Project sites as recommended by UMASS Soil & Plant Tissue Laboratory test results.
 - a. When pH of loam borrow is equal to or greater than 7 use aluminum sulfate to adjust pH downward to required levels.
 - b. When pH of loam borrow is less than 7 use either sulfur or ferrous sulfate to adjust pH downward to required levels.
 - c. When pH of loam borrow must be raised to the required levels use limestone.

- d. Regardless of amendment the Contractor chooses to use, the Contractor, not the Owner, shall be responsible for obtaining specified pH by seeding and/or planting time.
- E. Loam shall be uncontaminated by salt water, foreign matter and substances harmful to plant growth. Topsoil shall not have levels of extractable aluminum greater than 200 parts per million except for acid-loving plants. Cation Exchange Capacity (CEC) shall be between 10 and 15.
- F. All planting loam provided from off-site sources shall be brought to the site meeting all specification requirements. There must be no mixing or amending of soil on site. The loam borrow must not be handled or moved when in a wet or frozen condition. Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Esculentus, and all other primary noxious weeds
- G. Screened loam which has been stockpiled on the site may be used provided it can be made to comply with this Specification and that it has been screened to meet the above requirements.
- H. To assure planting loam purchased and screened loam stockpiled fulfills specified requirements regarding textural analysis, organic matter content, and pH, soil testing results will be obtained and paid for by the Contractor and submitted to the Architect for approval before any soil is placed or delivered to the site.
- I. Loam at the fiber reinforced fire lane shall meet the follow particles size criteria.

US STANDARD SIEVE NUMBER	%RETAINED
6	0
10	0
18	<5% than 10 combined
35	<25%
60	50% - 90%
100	<15%
270	<5%

1. Fineness Modulus: 1.4 – 2.0
2. Uniformity Coefficient: < 4 (2.5 – 3.5)

2.2 SAND BASED STRUCTURAL SOIL (SBSS), AERATION PIPE AND GRATES

- A. Sand-Based Structural Soil shall consist of a blend of approximately 60% by volume Coarse Sand, 15% by volume Base Loam and 25% by volume Organic Amendment. The components shall be blended to create a uniform mixture. Percentages will be adjusted as necessary to achieve the following grain size distribution and criteria below for material passing the #10 sieve by weight.

U.S. Sieve Size No.	Minimum	Maximum
10	100	(Coarse Sand)
18	68	90 (Coarse Sand)
35	38	63 (Coarse Sand)
60	18	39 (Fine Sand)
140	10	18 (Fine Sand)
270	8	10 (Silt)
0.002mm	1	4 (Clay)

1. Maximum size shall be one inch largest dimension. The maximum retained on the #10 sieve shall be 15% by weight of the total sample.
 2. The ratio of the particle size for 70% passing (D70) to the particle size for 20% passing (D20) shall be 3.0 or less ($D70/D20 < 3.0$).
 3. The final mix shall have a saturated hydraulic conductivity of no less than 6.0 inches per hour according to test procedure ASTM D5856-95 (2000) when compacted to a minimum of 88 percent of the maximum density as determined by AASHTO T-99, unless the soil will be placed in an area that experiences loading. If the soil will be placed under sidewalk, curbs or gutter, the density shall be a minimum of 93 percent maximum dry density as determined by AASHTO T-180. The mixes shall be compacted at 60% to 80% optimum moisture content.
 4. Organic content shall be between 2.5 and 3.5 percent by weight.
 5. Unless otherwise specified or recommended by the Soil Supplier's Soil Scientist: pH shall be between 6.5 and 7.2; CEC shall be a minimum of 6; and Soluble Salts shall be less than 500 ppm/0.5 mmhos/cm.
- B. Aeration pipe shall be 4" diameter single wall high density corrugated perforated polyethylene pipe and fittings meeting ASTM F667. Pipe and fitting material shall be high density polyethylene conforming with the minimum requirements of cell classification 323410C or 333410C as defined and described in the latest version of ASTM D3350 manufactured by ADS Advanced Drainage Systems, Inc. 4640 Trueman Blvd, Hilliard, OH 800-821-6710, or approved equal.
- C. Grates at finish grade for the vertical aeration pipe risers shall be HDPE with square grate to fit 4" round pipe securely, gray in color, as manufactured by NDS, Inc. 877-412-7467 www.ndspro.com or approved equal.

2.3 SOIL ADDITIVES

- A. Soil additives shall be used to counteract soil deficiencies as recommended by the soils analysis.
- B. Lime: Provide approved agricultural limestone containing not less than 85% of total carbonates with a minimum of 30% magnesium carbonates. Lime shall meet Massachusetts Department of Food and Agriculture standards for Fine-Sized Classification so that 50% passes a 100 mesh, 60% passes through a 60-mesh sieve, and 95% will pass a 20 mesh sieve.
- C. Aluminum Sulfate shall be unadulterated, 57% (Ortho Division, Chevron Chemical Company), or approved equal.
- D. Sand additive shall be comprised of clean, coarse, granular sand, subangular to sub-round, free from organic matter and deleterious substances. Sand shall be washed sand in accordance with the table below.

<u>SIEVE SIZE</u>	<u>% passing</u>
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No. 4	100
No. 8	90-100
No. 16	80-100
No. 30	25-60
No. 50	0-25
No. 100	0-5

No 200 0-3

1. The sand should have a coefficient of uniformity (D60/D10) of less than 4.0
 2. Amend existing loam to achieve requirements as described in 2.1.
- E. Compost: Provide compost as needed to raise the Organic Content of the topsoil to within specified range. Compost shall be:
1. Compost shall be derived from organic leaf and yard residues that meet all State Environmental Protection Agency requirements. The product shall be well composted, free of viable weed seeds and contain material of a generally humus nature capable of sustaining growth of vegetation, with no materials toxic to plant growth. The material shall be fully composted. The composted material shall have a moisture content such that no visible free water or dust is produced when handling the material. Submit complete product analysis including: Organic Nitrogen, Carbon/Nitrogen Ratio, Total Phosphorous, Total Potassium, Organic Matter, pH, particle size and product density.
 2. Compost products shall meet the following physical criteria:
- | <u>Parameters</u> | <u>Range</u> |
|-------------------------|------------------|
| pH | 5.5 – 8.0 |
| Moisture Content | 35% - 55% |
| C:N ratio | 15 – 30:1 |
| Organic Matter | > 40% |
| Particle Size | < 3/4" |
| Soluble Salts | < 4.0 mmhos (ds) |
| Bulk Density | < 1200 lbs/cuyd |
| Foreign Matter | < 1% by weight |
| Solvita Maturity Rating | 5 - 7 |
- b. Acceptance of composted products shall be based on the following submittals by the Contractor:
 - i. A request for Approval of a Material Source.
 - ii. A copy of the Composting Permit for the Material Source selected.
 - iii. Certification by the supplier that the compost product meets state EPA guidelines and that it originates from 100 percent recycled vegetation material that has been aerobically composted.
- G. Bone meal shall be fine ground, steam cooked, packing house bone with a minimum analysis of 23% phosphoric acid and 4% nitrogen.
- H. Fertilizers: Commercial fertilizer shall be a complete fertilizer complying with all State and Federal Fertilizer laws. Fifty-percent of available nitrogen shall be in a slow-release form as is found in certain urea-form products, or natural organic forms, or a combination of both. The salt index of the fertilizer shall not exceed 35. It shall contain the following percentages by weight.

		Lawns
Nitrogen	(N)	10%
Phosphorus	(P)	10%
Potash	(K)	10%

Fertilizer shall be delivered and mixed as specified, in standard size unopened containers, showing weight, analysis in compliance with Massachusetts Department of Food and Agriculture regulations, and name of manufacturer. It shall be stored in a weatherproof storage place, in such a manner that it will be kept dry, and its effectiveness not impaired.

1. Fertilizer for planting shall be formulated for top-dressing, soil surface application to plants. Fertilizer shall be designed and certified by the manufacturer to provide controlled release of fertilizer continuously for not less than 9 months. One hundred percent of the nitrogen content shall be derived from organic materials. Nitrogen source shall be coated to ensure slow release. Fertilizer percentages of weight of ingredients shall be as recommended by the soil testing and analysis specified, performed, and paid for under this Section, Loam and Planting Preparation.

PART 3 - EXECUTION

3.0 KICKOFF MEETING:

- A. At least 10 working days prior to the start of work, the Contractor shall request a landscape construction kickoff meeting with the owners representative, landscape architect and any other parties involved with landscape construction. Contractor shall articulate the means and methods of subgrade preparation, soil placement and other steps outlined in the Specification.

3.1 FILLING AND COMPACTION

- A. Verify that the subgrade preparations have been reviewed and accepted, including removal of all existing vegetation prior to placement of planting soils.
 1. Notify the Landscape Architect of soil placement operations at least seven calendar days prior to the beginning of work.
- B. Perform percolation tests on existing subsoils or placed fill prior to placing and spreading loam for seeding, sodding, and planting:
 1. Perform percolation testing of subsoil or placed fills to determine whether or not the subgrade will drain properly. Perform percolation tests as specified in this Section.
 2. In the event that percolation testing indicates that the subsoil, placed fills or ordinary borrow has been over compacted and will not drain, the contractor shall loosen up the top 36 inches (one meter) of the subgrade to be planted, seeded, or sodded by ripping or other mechanical means. Recompact the borrow by driving a small, tracked bulldozer over the area at low speeds so that the tracks of the bulldozer pass over the affected area and the soil is compacted to a density that will percolate as specified under the work of this Section. Under no circumstances shall wheeled vehicles be driven over subsoil, placed fills or ordinary borrow that have been shown to percolate or subsoil, placed fills or ordinary borrow that has been loosened and shown to percolate.
 3. Perform sufficient percolation tests in areas of poorly draining or compacted subsoil or compacted placed fills as directed by the Architect to ensure that these

underlying soils drain. Likewise, perform sufficient percolation tests after ripping and loosening to ensure that the soils are no longer too compact to drain.

- B. Subsoil or ordinary borrow shall have been excavated and filled as required by the Contract Documents. Do not damage the work previously installed. Maintain all required angles of repose of materials adjacent to the loam as shown on the Contract Documents. Do not over excavate compacted subgrades of adjacent pavement or structures during loaming operations.
- C. Confirm that the subgrade is at the proper elevation and that no further earthwork is required to bring the subgrade to proper elevations. Subgrade elevations shall slope parallel to the finished grade and or toward any subsurface drain lines as shown on the Contract Documents. Provide a written report to the Architect that the subgrade has been placed to the required elevations and that the subgrade drains water at the rates specified under the required percolation tests specified, performed and paid for under this Section, Loam and Planting Preparation. Perform no work of placing and spreading loam until elevations have been confirmed and written report has been accepted by the Architect.
- D. Clear the subgrade of all construction debris, trash, rubble and any foreign material. In the event that fuels, oils, concrete washout or other material harmful to plants have been spilled into the subgrade material, excavate the soil sufficiently to remove the harmful material. Such construction debris, trash, rubble and foreign material shall be removed from the site and disposed of in a legal manner. Fill any over excavation with approved fill and compact to the required subgrade compaction levels.
- E. Do not proceed with the installation of loam until all utility work in the area has been installed.
- F. Protect adjacent walls, walks and utilities from damage or staining by the loam. Use 0.5-inch plywood and or plastic sheeting to cover existing concrete, metal and masonry work and other items as directed during the progress of the work. Clean up all trash and any soil or dirt spilled on any paved surface at the end of each working day.

3.2 FINE GRADING

- A. Immediately prior to dumping and spreading loam, the subgrade shall be in a friable condition, cleaned of all stones greater than 2 inches and all debris or rubbish. Such material shall be removed from the site, not raked to the edges and buried. Notify the Architect that the subsoil has been cleaned and request his/her attendance on site to review and approve subgrade conditions prior to spreading loam borrow.
- B. Loam borrow delivered to the site shall be protected from erosion at all times. Materials shall be spread immediately. Otherwise, materials that set on site for more than 24 hours shall be covered with tarpaulin or other soil erosion system acceptable to the Architect and surrounded by silt fence.
- C. No loam borrow shall be handled, planted, or seeded in any way if it is in a wet or frozen condition. A moist loam borrow is desirable.
- D. Soil additives shall be spread and thoroughly incorporated into the layer of loam by harrowing or other methods reviewed by the Architect. The following soil additives shall be incorporated:
 - 1. Ground limestone or acidulant as required by soil analysis to achieve the required pH as described in this Section. Spread limestone at the rate required

by soil analysis up to a maximum limit of 200 pounds per 1,000 square feet. Should recommendations of soil analysis require greater rates of application than 200 pounds per 1,000 square feet, a surface application of limestone not in excess of 50 pounds per 1,000 square feet shall be made to the established lawn during the season after Final Acceptance. This second application of limestone shall be performed and paid for under the work of Section 32 92 00, Turf and Grasses, at rates determined under the testing requirements of this Section, Loam and Planting Preparation.

2. Fertilizer at the rate and of analysis recommended by the soil analysis. For lawn areas this fertilizer application shall be the first in a series of fertilizer applications made under this Contract and shall be applied and incorporated under this Section, Loam and Planting Preparation. A second and third application of fertilizer for turf areas shall be specified, spread and paid for under Section 32 92 00 Turf and Grasses, of this Specification. For planting areas this fertilizer application shall be primary application and the process of application described under Section 32 90 00, Planting of this Specification and specified, provided, performed and paid for under this Section, Loam and Planting Preparation.
 3. Compost, sand or other soil amendments as required by soil analysis.
- E. Loam shall be sampled and tested as specified, performed and paid for under the work of this Section, to verify application and incorporation of limestone, fertilizer and other soil amendments.
- F. After loam and required additives have been spread, carefully prepare the loam by scarifying, harrowing, or tilling the loam to integrate soil additives into the top 8 inches of the loam. Remove all large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Remove from unscreened soils all stones over 3/4 inch in diameter from the top 6 inches of the loam bed. Loam shall also be free of smaller stones in excessive quantities as determined by the Architect and as specified herein.
- G. Sufficient grade stakes shall be set for checking the finished grades. Stakes must be set in the bottom of swales and at the top of slopes. Deviation from indicated elevations that are greater than one-tenth of a foot shall not be permitted. Connect contours and spot elevations with an even slope. Finish grades shall be smooth and continuous with no abrupt changes at the top or bottom of slopes.
- H. During the compaction process, all depressions caused by settlement or rolling shall be filled with additional loam and the surface shall be regraded and rolled until presenting a smooth and even finish corresponding to the required grades.
- I. The Contractor shall install loam in successive horizontal lifts no thicker than 6 inches in turf areas and 12 inches in plant bed areas to the desired compaction as described herein. The Contractor shall install the soil at a higher level to anticipate any reduction of loam borrow volume due to compaction, settling, erosion, decomposition, and other similar processes during the warranty period. The Architect will ensure that the full depths of loam for lawn and plant beds are obtained by digging holes in the loam at the same frequency as for compaction testing.
1. Compact loam to the required density as specified.
 2. Maximum dry density for loam shall be determined in accordance with ASTM D698. The following percentages of minimum to maximum dry densities shall be achieved for fill materials or prepared subgrades.

In lawn, plant beds and tree pits:

	Minimum	Maximum
Soils within planting areas in top eighteen inches of finished grade	80%	85%
Soils within Lawn Areas in top eighteen inches of finished grade	84%	86%

3. The surface area of each lift shall be scarified by raking prior to placing the next lift.

- J. In addition to the range cited above, compact each lift sufficiently to reduce settling but not enough to prevent the movement of water and feeder roots through the soil. The loam borrow in each lift should feel firm to the foot in all areas and make only slight heel prints. At completion of the loam borrow installation, the soil should offer a firm, even resistance when a soil sampling tube is inserted from lift to lift. After the placement of each lift, perform percolation tests to determine if the soil has been over compacted. Perform the following percolation test procedure:

1. Dig a hole in the installed soil that is a minimum of 4 inches in diameter. Holes in 6-inch lift in turf areas shall be 4 inches deep. Holes in 12-inch lifts in plant beds shall be 8 inches deep. Do not penetrate through the lift being tested.
2. Fill the hole with water and let it drain completely. Immediately refill the hole with water and measure the rate of fall in the water level.
3. In the event that the water drains at a rate less than one inch per hour, till the soil to a depth required to break the over compaction.
4. Perform a minimum of one soil percolation test per 10,000 square feet area of turf area and 2,500 square feet of tree and shrub planting area as directed by the Architect.

- K. Select equipment and otherwise phase the installation of the loam to ensure that wheeled equipment does not travel over subsoil, placed fills or ordinary borrow or already installed soil. Movement of tracked equipment over said soils will be reviewed and considered for approval by the Architect. If it is determined by the Architect that wheeled equipment must travel over already installed soil, provide a written description of sequencing of work that ensures that compacted soil is loosened and uncompacted as the work progresses or place one-inch thick steel plate ballast (or equivalent ballast approved by the Architect) over the length and width of any travel way to cover loam borrow to protect it from compaction.

- L. Disturbed areas outside the limit of lawn work shall be graded smooth and spread with a minimum of 6 inches of loam to the finished grade.

- M. Contractor shall be responsible for maintaining all stockpiles of existing, on-site loam on the site until final placement of all loam has been approved by the Architect in writing. No loam shall be removed from the site unless approved by the Architect in writing. Upon written approval by the Architect, Contractor shall remove all excess, unused existing on-site loam from the site and dispose of it in a legal manner.

- N. The contractor shall install erosion control matting where required on the drawings and specified under Section 32 92 00 – Turf and Grasses.

3.3 SAND BASED STRUCTURAL SOILS, AERATION PIPES AND GRATES

- A. Install sand based structural soils, aeration pipes and grates in accordance with the Detail where indicated on the drawings.

- B. Lay piping during placement of the sand based structural soil and compact to 92-95% carefully to avoid damage to pipes and fittings.
- C. Install base course and surface pavements in coordination with setting the aeration grates within the finish paving design. Secure grates to the top of pipe risers to be flush with finish grade.

3.4 ACCEPTANCE

- A. Confirm that the final grade of the loam borrow is at the proper finish grade elevations. Adjust grade as required to meet the contours and spot elevations noted on the Plans. Request the presence of the Architect to inspect final grade. Do not proceed with the remaining work of this Contract until the Architect has given his/her written approval of the final grade.

END OF SECTION

**SECTION 32 92 00
TURF AND GRASSES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:
 - 1. Seeding
 - 2. Installation of erosion control blanket
 - 3. Maintenance
 - 4. Inspection and acceptance
 - 5. Cleaning and protection

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:
 - 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 16 00 – Asphalt Paving
 - 6. Section 32 13 13 – Concrete
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 90 00 - Planting
 - 9. Section 32 91 00 – Loam and Planting Preparation
 - 10. Section 33 40 00 – Storm Drainage Utilities
- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.
 - 1. The planting subcontractor shall become fully acquainted with the nature and requirements of the project including the location of all underground utilities prior to starting the work of this Section.

1.04 SUBMITTALS

- A. Material Samples and testing:
 - 1. Provide full analysis of existing on-site loam, and off-site loam source from a laboratory that has been approved in writing by the Architect. Sampling and

testing shall be as specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.

2. Provide manufacturers' certified analysis for soil amendments and fertilizers to meet the requirements of this Section, Turf and Grasses.
3. Provide certified analysis for seed mixtures required including percentages of purity, germination and weed seed.
4. Provide organic pre-emergent weed treatment product and safety data, application rates.

1.05 REGULATORY REQUIREMENTS

- A. Strictly comply with all applicable codes, regulations and requirements having jurisdiction.
- B. All fertilizer and pesticide applications shall be performed by a licensed applicator in strict conformance with all local, state and federal regulations. Notify the Architect at least two (2) weeks prior to scheduled date of application.

1.06 QUALITY ASSURANCE

- A. All work shall be performed by experienced landscape professionals familiar with planting procedures and under the full-time supervision of a qualified foreman.
- B. Analysis of Materials: For each type of packaged material required for the work of this Section, provide manufacturers' certified analysis.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Packaged Materials: Deliver packaged materials in manufacturer's original unopened containers showing weight, analysis and name of manufacturer. Comply with manufacturer's instructions and recommendations for storage and handling. Protect all materials from damage, deterioration, injury and theft while stored at the site.

1.08 EXAMINATION OF CONDITIONS

- A. All areas to be seeded shall be inspected by the Contractor prior to starting work and any incorrect grading or inadequate drainage shall be reported to the Architect prior to beginning work.

PART 2 - PRODUCTS

2.01 LOAM

- A. Loam for lawns shall be approved, specified, provided, and installed under the work of Section 32 91 00, Loam and Planting Preparation, and loam amendments required by the test results and the work of this Section including but not limited to humus, fertilizers and limestone shall be applied separately at the required rates to the rough graded loam and shall be thoroughly and evenly incorporated to the full depth of the in-place loam. Apply approved limestone in sufficient quantity to bring the acidity of the loam to pH 6.5.

2.02 SOIL ADDITIVES

- A. Soil additives shall be specified, provided, and installed under the work of Section 32 91 00 Loam and Planting Preparation.

2.03 SEED

- A. Seed Material: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination establish by Official Seed Analysis of North America. Seed shall be composed of the following varieties that shall be mixed in the proportions stated and shall test to minimum percentages of purity and germination. Deliver seed in fully labeled, standard, sealed containers. Seed that has become wet, moldy, or otherwise damaged, will not be accepted.

- B. Seed, General Lawn, shall have the following seed mixture composition:

<u>Common Name</u>	<u>Proportion By Weight</u>	<u>Percent Purity</u>	<u>Percent Germination</u>
Pennlawn Fescue	50%	95%	90%
Penn Fine Ryegrass 'Penn Fine'	25%	95%	90%
Baron Kentucky Bluegrass	25%	95%	90%

1. All varieties shall be within the top 50 percent and 25 percent respectively, of varieties tested in National Turfgrass Evaluation Program, or currently recommended as low maintenance varieties by University of Massachusetts or the University of Rhode Island.
2. Seeding rate for the seed mix shall be 6 pounds per 1,000 square feet.
3. Seed used for overseeding as specified herein shall be Perennial Ryegrass having 95% purity and 90% germination.

2.04 FERTILIZERS

- A. Fertilizer shall be a commercial product complying with the State and United States fertilizer laws. Deliver to the site in the original unopened containers that shall bear the manufacturer's certificate of compliance covering analysis. Fertilizer shall contain not less than the percentages of weight of ingredients as recommended by the soil analysis.
- B. Nitrogen fertilizer shall be slowly soluble ureaformaldehyde, methylene urea, or isobutylidene diurea; or slow release sulfur-coated urea.
- C. Phosphorus shall be superphosphate or triple superphosphate.
- D. Potassium shall be sulfate of potash, K₂SO₄.
- E. Salt indexes per unit of nutrient for nitrogen, phosphorous, and potassium shall be less than 1.0 when compared to sodium nitrate (6.3).

2.05 LIMESTONE

- A. Ground limestone for adjustment of loam borrow pH shall contain not less than 85 percent of total carbonates and shall be ground to such fineness that 40 percent will pass through 100 mesh sieve and 95 percent will pass through a 20 mesh sieve. Contractor shall be aware of loam borrow pH and the amount of lime needed to adjust pH to specification in accordance with testing lab recommendations.

2.06 WATER

- A. Water: shall be furnished by the Contractor from a legal off-site source via water truck and be suitable for irrigation, free of toxic ingredients. Sources of water at or near the site that are made available to the Contractor are a convenience to the Contractor. Limitations of site water sources shall be supplemented by off-site sources at the Contractor's expense to meet the maintenance requirements of this Section. Any municipal fees associated with providing water for this work shall be borne by the Contractor.

1. Watering Equipment: The Contractor shall furnish sufficient watering equipment to distribute water evenly with complete coverage daily to all seeded areas.

2.07 STRAW

- A. Straw for mulch at seeded areas shall be mowings of acceptable herbaceous growth reasonably free from noxious weeds or woody stems and shall be reasonably dry. No salt hay shall be used.

2.08 WOOD FIBER MULCH

- A. Wood Fiber Mulch: shall be derived from natural, clean, whole woodchips. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard fiber. It shall be dyed green to contrast with the soil on which it is to be applied. Fiber shall have a water holding capacity of not less than 31.5 ounces of water per 3.5 ounces of fiber. The rate of application for wood fiber mulch shall be in accordance with manufacturer's guidelines.

2.09 EROSION CONTROL MAT

- A. The erosion control blanket shall be a machine-produced mat of 100% agricultural straw matrix. The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with lightweight photodegradable polypropylene netting having an approximate 0.50 x 0.50 inch (1.27 x 1.27 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers (50 stitches per roll width) with degradable thread. The blanket shall be manufactured with a colored line or thread stitched along both outer edges (approximately 2-5 inches [5-12.5 cm] from the edge) to ensure proper material overlapping. The straw erosion control blanket shall be S150 as manufactured by North American Green, or Architect approved equal. The erosion control blanket shall have the following properties:

1. Material Content:

Matrix	100% Straw Fiber (0.50 lb/yd ²) (0.27 kg/m ²)
Netting	Both sides lightweight photodegradable (1.64 lbs/1,000 ft ² [0.80 kg/100m ²] approximate weight)
Thread	Degradable

2. Physical Specifications (per roll):

	English	Metric
Width	6.67 ft	2.03 m
Length	108.00 ft	32.92 m
Weight	40.00 lbs \pm 10%	18.14 kg
Area	80.00 yds ²	66.89 m ²
Stitch Spacing	1.50 inches	3.81 cm

3. Furnish and install erosion control mat on all seeded areas of 3:1 or greater in slope and in all vegetated swales.

2.10 HERBICIDES, CHEMICALS AND INSECTICIDES

- A. Provide chemicals and insecticides as needed for fungus or pest control. All chemicals and insecticides shall be approved by the Massachusetts Department of Food and Agriculture for the intended uses and application rates.
- B. Provide post emergent crab grass control throughout the maintenance period to ensure a germinated and mown lawn free of crab grass.

PART 3 - EXECUTION

3.00 GENERAL

- A. All areas within the Limit of Work lines not required to be otherwise developed shall be seeded as shown in the Contract Documents. The Contractor shall restore all lawn areas disturbed because of this Contract with specified loam and seed, as directed by Owner, whether within or outside the Limit of Work line.

3.01 PREPARATION OF SUBGRADE AND SPREADING OF LOAM

- A. Preparation of subgrade and spreading of loam shall be specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.

3.02 FINE GRADING

- A. Fine grading shall be specified, and performed under the work of Section 32 91 00 Loam and Planting Preparation.

3.03 SEEDING

- A. Contractor shall obtain Landscape Architect's written approval of fine grading and be preparation before doing any seeding work.
- B. Seeding shall be done immediately after fine grading provided the seedbed has remained in a friable condition and has not become muddy or hard. If it has become hard, it shall be tilled to a friable condition and fine graded again.
- C. The season for seeding shall be from April 1 to June 15 and from August 15 to October 15. The actual planting of seed shall be done, however, only during periods within this season which are normal for such work as determined by weather conditions and by accepted practice in this locality. To prevent loss of soil via water and wind erosion and to prevent the flow of sediment, fertilizer, and pesticides onto roadways, sidewalks, and into catch basins, seed loam areas within 5 Days of spreading the loam.

- D. Sow seed using a spreader or hydroseeder. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity of seed specified or scheduled. Apply seed at one half the rate in two directions at right angles to each other. Roll the seeded areas lightly and water with a fine spray.
 - 1. After the grass has germinated, all areas and parts of areas that fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded and such areas and parts of areas shall be reseeded repeatedly until all areas are covered with a uniform germination.
 - 2. Install straw mulch at areas seeded by spreader and cellulose fiber mulch at areas seeded by hydroseeder. Install mulch immediately after fine grading topsoil and seeding.
 - 3. Sow seed using a spreader in lawn areas directly adjacent to building structures as an alternative to Hydroseeding in these areas.
- E. Seeding of lawn shall be by Hydroseeding Method specified as follows:
 - 1. Prior to the start of work, furnish a certified statement as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of hydroseeding that can be covered with the quantity of solution in the hydroseeder.
 - 2. Hydroseed with wood cellulose fiber mulch at a rate of 46 pounds per 1,000 square feet or 2000 pounds per acre.
 - 3. For the hydroseeding process, a mobile tank with a capacity of at least 500 gallons shall be filled with water and the mixture noted above in the specified proportions. The resulting slurry shall be thoroughly mixed by means of positive agitation in the tank. Apply the slurry by a centrifugal pump using the hose application techniques from the mobile tank. Only hose application shall be permitted. At no time shall the mobile tank or tank truck be allowed onto the prepared hydroseed beds. The hose shall be equipped with a nozzle of a proper design to ensure even distribution of the hydroseeding slurry over the area to be hydroseeded and shall be operated by a person thoroughly familiar with this type of seeding operation.

3.04 LAWN MAINTENANCE

- A. Maintenance shall begin immediately after any area is seeded and shall continue for a minimum of 60 days during the active growing period for seeded areas or until Final Acceptance, whichever is longer.
- B. Following the completion of all lawn construction work, and until final acceptance of the project. In the event that seeding operations are completed too late in the Fall for adequate germination and growth of grass, then maintenance shall continue into the following Spring for the minimum 60 Day period.
- C. Maintenance shall consist of watering, weeding, mowing, repair of ruts and erosion, repair of protective devices and reseeded.

1. Weed treatment: At low mow fescue lawns that were seeded the previous fall, a pre-emergent herbicide application is required in early spring. A post-emergent shall also be applied in late spring.
- D. Watering: The Contractor shall include in his base bid costs for daily and, if necessary, continuous watering of all grass areas during a normal eight hour working day to maintain the seed bed in a continuous moist condition satisfactory for good germination and turfgrass development. Control weeds as necessary to maintain grass at 98% weed free.
- E. Maintenance shall include all temporary protection fences, barriers and signs and all other work, tools and equipment incidental to proper maintenance.
- F. The Contractor shall be responsible for all maintenance of lawns necessary to establish a uniform germination of the specified grasses.
- G. Mowing and Edging:
 1. The Contractor shall keep all lawns mowed until Acceptance of the contract by cutting to a height of 2 inches when growth reaches 3 inches or as directed by the Landscape Architect.
 2. At each mowing, all edges of walks, drives, plant beds and other border conditions shall be edge trimmed by hand or machine to produce straight and uniform edge conditions.
 3. Remove and discard from paved areas only clippings and debris generated by each mowing and edging operation legally off-site. Landscape Architect, if practical and aesthetic, may allow sweeping (not blowing) clippings back into grass. Mowers shall be equipped with mulching blades. Do not remove from grass areas any clippings that have been generated by mowing operations. Do not mow grass when wet.
- H. Fertilizing at General Lawn seeded areas: The first application of fertilizer is specified, provided, performed and paid for under the Section 32 91 00, LOAM AND PLANTING PREPARATION. A second application of fertilizer shall be applied to seeded areas at the time of the first mowing and shall be performed and paid for under this section, TURF AND GRASSES. This second application shall be applied at a rate that ensures that one-half pound of nitrogen is applied per 1,000 square feet. Phosphorus and potassium shall be applied proportionally in accordance with the recommendations of the soil tests and the quantities previously integrated into the soil during the first application. A third application of nitrogen fertilizer shall be applied to seeded areas approximately two months after the second application and shall be paid for under this section, TURFS AND GRASSES. This third application shall correspond to the following application rates dependent upon the month of application.
 1. May 1-15: Apply 1.0 pound of nitrogen per 1,000 square feet.
 2. June 15-30: Apply 1.0 pound of nitrogen per 1,000 square feet.
 3. August 15 through September 15: Apply 1.0 pound of nitrogen per 1,000 square feet.
 4. November 1-15: Apply 1.5 pounds of nitrogen per 1,000 square feet.Nitrogen fertilizer shall be composed of 50 percent slowly soluble or slow release nitrogen fertilizer.

3.05 LAWN REVIEW AND ACCEPTANCE

- A. At the end of the maintenance period, seeded areas shall have a close stand of grass as defined above with no weeds present and no bare spots greater than 3 inches in diameter over greater than 5 percent of the overall seeded area. At least 90 percent of the grass established shall be permanent grass species. If seeded areas are deficient, the Contractor's responsibility for maintenance of all seeded areas shall be extended until deficiencies are corrected. Seeded areas to be corrected shall be prepared and reseeded in accordance with the requirements of this Section, TURF AND GRASSES.
- B. At the time of acceptance, the Contractor shall remove temporary barriers used to protect lawn areas.
- C. The Architect shall review the lawns upon written request by the Contractor. The request shall be received at least ten days before the anticipated date of review.
- D. The conditions of lawns will be noted and determination made by the Architect whether maintenance shall continue in any part. When acceptance is made in writing to the Contractor, the Contractor's responsibility for maintenance of lawns or parts of lawns shall cease.
- E. Areas of lawn not meeting the criteria for establishment specified herein will be noted. Remedial work and maintenance shall continue until the lawn is accepted by the Owner.

3.06 CLEANING AND PROTECTION

- A. During operations, keep pavements clean and work area in an orderly condition. Protect lawns from damage by other contractors and trades and trespassers. After completion of the work, the Contractor shall remove all debris, materials, rubbish, excess dirt, etc. from the site and dispose of them in a legal manner. The premises shall be left clean and presentable to the satisfaction of the Architect.

END OF SECTION

SECTION 33 40 00
STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform all planting work and related items as indicated on the Contract Documents and as specified in this Section and includes, but is not limited to, the following:

- 1. High Density Polyethylene pipe and fittings (HDPE)

1.03 RELATED WORK

- A. Carefully examine the site and all of the Contract Documents for requirements that affect the work of this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions. Other specifications sections that directly relate to the work of this Section include, but are not limited to, the following:

- 1. Section 11 68 00 – Playground Equipment
 - 2. Section 12 93 00 – Site Furnishings
 - 3. Section 31 10 00 – Site Clearing and Preparation
 - 4. Section 31 23 00 – Excavation Filling and Grading
 - 5. Section 32 16 00 – Asphalt Paving
 - 6. Section 32 13 13 – Concrete
 - 7. Section 32 18 16.13 – Playground Protective Surfacing
 - 8. Section 32 90 00 - Planting
 - 9. Section 32 91 00 – Loam and Planting Preparation
 - 10. Section 32 92 00 – Turf and Grasses

- B. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

- 1. The Contractor shall become fully acquainted with the nature and requirements of the project including the location of all underground utilities prior to starting the work of this Section.

1.04 Submittals

- A. Refer to Division 1, for submitted provisions and procedures.
 - 1. Product Data: Submit manufacturer's technical product data and installation instructions for storm drain system materials and products. Descriptive literature showing pipe dimensions, pipe and joint materials and dimensions, and other details for each class or type of pipe or product to be furnished for this contract. All pipe furnished under the

contract shall be manufactured in accordance with these Specifications.

1.05 Interpretation of Drawings

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of a lack of knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation of the site.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period and formed his own conclusions as to the full requirements of the work involved.
- C. All work shall be performed to the true intent and purpose of the drawings and all necessary parts to make complete, approved working systems ready for use, shall be furnished without extra charge.

1.05 Obtaining Information

- A. Obtain from the manufacturer the proper method of installation and connection of the equipment that is to be furnished and installed. Obtain all information that is necessary to facilitate the work and complete the project.

PART 2 - PRODUCTS

2.01 Corrugated Polyethylene Pipe

- A. General: Provide pipes of the following materials of class indicated. Provide pipe fittings and accessories of same materials and class as pipes with joining method, as indicated. The piping shall be manufactured by an established manufacturer of good reputation in the industry and in a permanent plant adapted to meet all the design requirements of the pipe.
 - 1. Corrugated perforated polyethylene pipe shall have an interior surface that is smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind. Pipe shall conform to AASHTO M-294, AASHTO M252, or AASHTO MP6, Type S depending on the diameter of the pipe required.
 - 2. Pipe and fittings shall be high-density polyethylene meeting the requirements of ASTM D3350.
 - 3. Pipe shall be installed with a minimum 12-inch cover for AASHTO H-20 loading.
- B. Joints on Corrugated Polyethylene Pipe.
 - 1. Corrugated polyethylene pipe and fittings shall be jointed with coupling devices made by the same manufacturer as the piping and of the same material specified for the piping.
 - 2. Coupling bands or external snap couplings shall cover a minimum of one full corrugation in each section of pipe to be joined. Couplings shall have neoprene gaskets to minimize soil infiltration.

3. Pipe entrances at structures shall be made with a mortar made with Type II cement. Mortar mixture shall follow instructions provided by cement manufacturer.

4. Watertight joints shall be provided when indicated on the Contract Drawings.

2.02 Filter Fabric

A. Filter Fabric used shall conform to Section 31 90 00-Excavation, Filling and Grading.

2.03 Crushed Stone

A. Crushed Stone used shall conform to Section 31 90 00-Excavation, Filling and Grading.

2.04 DRAIN COUPLINGS

A. Drain Couplings shall be pressure rated at least equal to that of the pipe. The coupling sleeve, shall be 1/4-inch minimum thickness elastomeric polyvinylchloride with a minimum tensile strength of 1500 psi. The sleeve shall fit snugly onto the pipe to be joined and be resistant to common chemicals present in storm water. Adjustable pipe clamps shall consist of a slotted band that mate with the worm gear screw and a screw housing all manufactured of stainless steel, and suitable for underground service.

2.05 CLEANOUTS

A. General: Provide cast-iron ferrule and countersunk brass cleanout plug, with round cast-iron access frame and heavy-duty, secured, scoriated cast-iron cover.

B. The drain cleanouts shall be minimum 6-inch diameter or sized to match the service pipe, whichever is greater. The cleanout shall be complete with a flush mount over. The cleanout cover shall be clearly marked "DRAIN" and shall be minimum eight inches in diameter or two inches greater than the cleanout size, whichever is greater. Cleanouts shall include a watertight cap.

PART 3 - EXECUTION

3.01 General Requirements

- A. Obtain detailed information from the manufacturers of apparatus as to the proper method of installing and connecting same.
- B. Carefully store materials and equipment that are not immediately installed after delivery. Close open ends of work with temporary covers or plug during construction to prevent entry of obstructing material.
- C. Any defective pipe, fitting or drain apparatus that is discovered after it has been installed or has been installed improperly, shall be removed and replaced with non-defective parts to the satisfaction of the Landscape Architect at the Contractor's expense.

- D. Trenches shall be kept free of water and as dry as possible during the installation of the bedding material, pipe and jointing for as long a period as required. Pipe shall not be laid in water or when trench conditions are unsuitable for the work.
- E. No backfilling shall take place, unless otherwise ordered by the Landscape Architect, until the inspection has been completed.
- F. Excavation, backfill and pipe bedding material shall be in accordance with Section 31 00 00 Excavation, Filling and Backfill.

3.02 Installation of Corrugated Polyethylene Pipe and Pipe Fittings

- A. General: Install piping in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.
- B. Pipe Storage: Pipe sections shall not be stored on areas over the newly placed pipe or other pipelines which might be damaged by the superimposed load, and storage sections shall be restricted to approved areas.
- C. Handling Pipe: The Contractor will be required to furnish suitable devices to permit satisfactory support of all parts of the pipe unit when it is lifted.
- D. Placing Pipe: Except where a concrete cradle or envelope is required, the pipe shall be placed in a crushed stone cradle. In trenches, no blocking or supporting of the piping by concrete, stones, bricks, wooden wedges, or method other than bedding the pipe on crushed stone will be permitted. Each length of pipe shall be shoved home against the pipe previously laid and held securely in position. Joints shall not be "pulled" or "cramped".
- E. Jointing Pipe: After the pipe are aligned in the trench and are ready to be jointed, all joint surfaces shall be cleaned.
- F. Alignment and Placement: All pipe shall be placed with extreme care as to grade and alignment. Each pipe shall be so placed as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.
 - 1. Stakeout of drain work and setting of line and grade is the responsibility of the Contractor.
- G. Cleaning: Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water, and debris from entering any existing Drain.
 - 1. Place plugs in end of uncompleted conduit at end of day or whenever work stops.
 - 2. Flush lines between manholes to remove collected debris.
- H. Review of Completed Corrugated Polyethylene Pipe System: If the visual observation of the completed drain or any part thereof shows any pipe, manhole, or joint to be of defective work or material the defect shall be replaced or repaired as directed. The visual observation shall be conducted by the Owner's representative and any defects shall be as identified by such. The

Contractor shall coordinate and provide site access for the Owner.

3.03 Drain Couplings

A. Couplings which are factory manufactured shall be installed at all connections from existing pipe to proposed pipe unless the existing pipe is the same material as the proposed pipe and the bell and spigot end of the pipes to be connected are compatible and free from defects. All drain couplings shall be installed in accordance with the manufacturer's recommendations for the types of pipe to be connected.

3.04 Cleanouts

A. Install cleanouts and extensions from drain pipe to cleanout at grade as indicated on the Contract Drawings. Set cleanout frame and cover flush within concrete paving.

3.05 BACKFILLING

- A. General: Conduct excavation and backfill operations for structure and pipe installations in accordance with Section 312000 – EARTHWORK, local requirements, and the contract documents.
- B. Initial backfill shall be placed evenly on both sides of the pipe to distribute the load and not to cause movement or deflection of the pipe.

3.06 FIELD QUALITY CONTROL

- A. Testing: Perform testing of completed piping in accordance with local authorities having jurisdiction.
- B. Cleaning: Clear interior of piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed.
 - A. In large, accessible piping, brushes and brooms may be used for cleaning.
 - B. Place watertight plugs in ends of uncompleted pipe at end of day or whenever work stops. If water is in the trench when work is resumed, the plug shall not be removed until the trench has been dewatered and all danger of water entering the pipe eliminated.
 - C. Flush piping between manholes to remove collected debris.
- C. Interior Inspection: If deemed necessary by the Owner's Representative, inspect piping to determine whether line displacement or other damage has occurred.
 - A. Make inspections after pipe between manholes has been installed and approximately 2 feet of backfill is in place, and again at completion of project.
 - B. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, the Contractor shall correct such defects and reinspect.

3.07 Drainage System Cleaning and Acceptance

- A. The new drainage system shall be cleaned by flushing all pipes with clean water and removal of debris from catch basins and drywells, prior to final review and acceptance by the Owner.
- B. The Contractor is responsible for coordinating and scheduling the inspection of the work by local jurisdictional authorities. No additional payment will be made for inspections and permits required in the performance of the work.

END OF SECTION

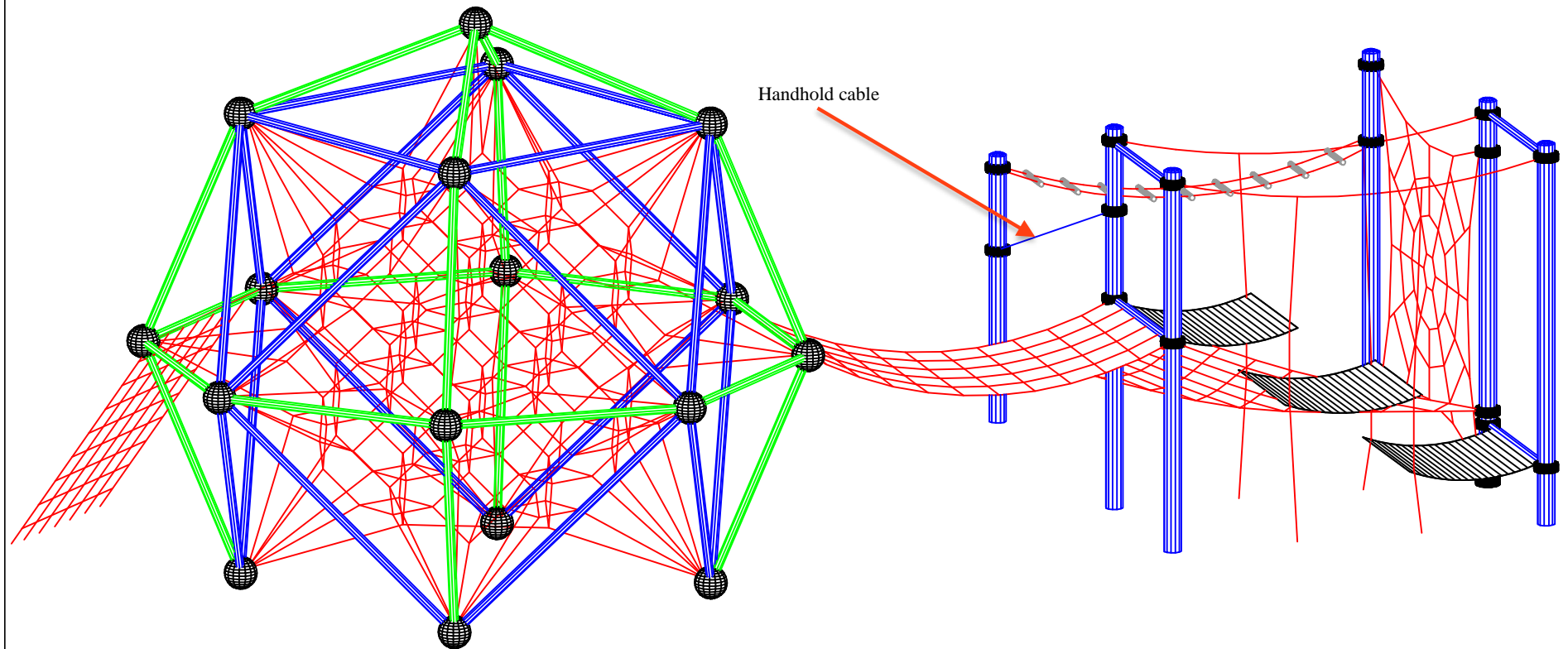
APPENDIX A

INSTALLATION INSTRUCTIONS FOR OWNER-SUPPLIED PLAY EQUIPMENT AND FURNISHINGS

BERLINER
SEILFABRIK
Lengeder Str. 4
13407 Berlin
Tel. 030 / 414724-0

Univers
Bishop School
perspective 1
Spaseball L
+ accessories

2007	date	name	drawing no.	scale
work on	16.07	Stoppel	KOM.864.00	1/4"=1'
change				





Bishop Elementary School



Bishop Elementary School



Installation Instructions

Challengers® Models CH0007, CH0009, CH0018,
CH0028, CH0038, CH0048, CH0058, CH0068,
CH0076, CH0256, CH0258
Steel Support Post w/ Cap
100 in. (2540 mm) to 224 in. (5690 mm)

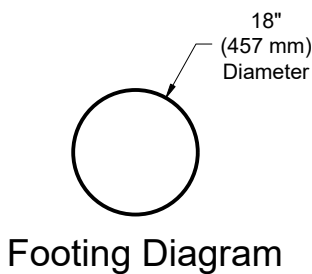
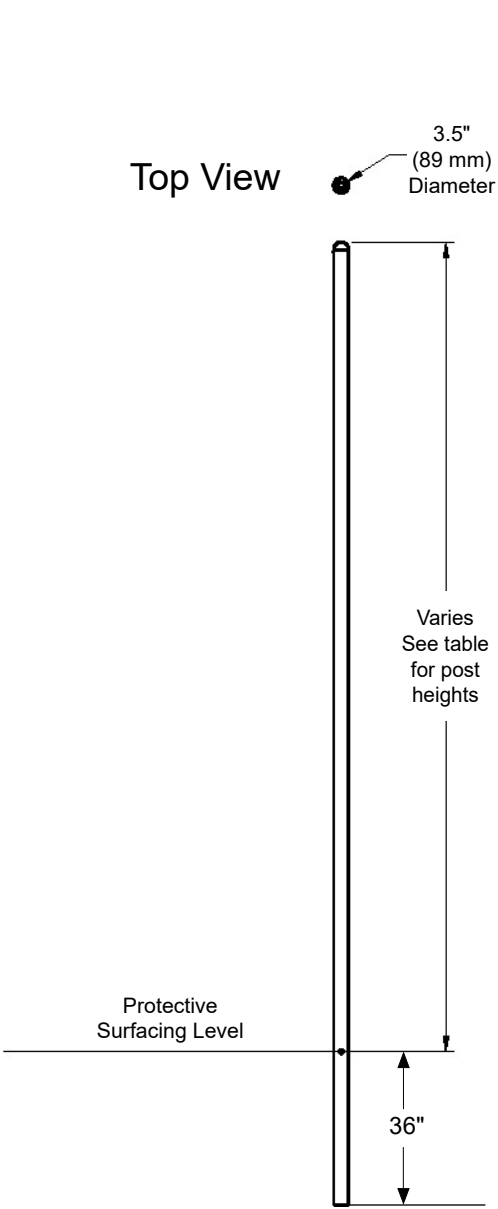
Installation Preparation

Recommended Crew: Two (2) adults
Installation Time: 1 man-hour
Concrete Required: 0.13 cubic yard (0,10 cubic meters)



Assembly View *(representative model)*

Installation Instructions



Model	Post Height	Post Height above Surfacing
ZZCH0007	100" (2540 mm)	64" (1626 mm)
ZZCH0009	112" (2845 mm)	76" (1930 mm)
ZZCH0018	124" (3150 mm)	88" (2235 mm)
ZZCH0028	136" (3454 mm)	100" (2540 mm)
ZZCH0038	148" (3759 mm)	112" (2845 mm)
ZZCH0048	160" (4064 mm)	124" (3150 mm)
ZZCH0058	172" (4369 mm)	136" (3454 mm)
ZZCH0068	184" (4674 mm)	148" (3759 mm)
ZZCH0076	200" (5080 mm)	164" (4166 mm)
ZZCH0256	212" (5385 mm)	176" (4470 mm)
ZZCH0258	224" (5690 mm)	188" (4775 mm)



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Footing Details**.

__Step 4: Set the support post into excavated footings in accordance with placement called out on the footing diagram. The post should be placed on a perforated shipping tube cap or on another porous flat surface to prevent any buildup of moisture in the base of the post. Block the support post at the specified depth.

Note: Heights of the decks and play components are measured from the top of protective surfacing.

Final Details.

__Step 5: Plumb and level the support post. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

CH0007 - STEEL SUPPORT POST w/ CAP 100 in. (2540 mm)

PART NO.	DESCRIPTION	QTY.
CAP5036	POST - 3-1/2" O.D. x 100" STEEL w/ CAP & LBL AT 36"	1

CH0009 - STEEL SUPPORT POST w/ CAP 112 in. (2845 mm)

PART NO.	DESCRIPTION	QTY.
CAP5038	POST - 3-1/2" O.D. x 112" STEEL w/ CAP & LBL AT 36"	1

CH0018 - STEEL SUPPORT POST w/ CAP 124 in. (3150 mm)

PART NO.	DESCRIPTION	QTY.
CAP5040	POST - 3-1/2" O.D. x 124" STEEL w/ CAP & LBL AT 36"	1

CH0028 - STEEL SUPPORT POST w/ CAP 136 in. (3454 mm)

PART NO.	DESCRIPTION	QTY.
CAP5042	POST - 3-1/2" O.D. x 136" STEEL w/ CAP & LBL AT 36"	1

CH0038 - STEEL SUPPORT POST w/ CAP 148 in. (3759 mm)

PART NO.	DESCRIPTION	QTY.
CAP5044	POST - 3-1/2" O.D. x 148" STEEL w/ CAP & LBL AT 36"	1

CH0048 - STEEL SUPPORT POST w/ CAP 160 in. (4064 mm)

PART NO.	DESCRIPTION	QTY.
CAP5046	POST - 3-1/2" O.D. x 160" STEEL w/ CAP & LBL AT 36"	1

CH0058 - STEEL SUPPORT POST w/ CAP 172 in. (4369 mm)

PART NO.	DESCRIPTION	QTY.
CAP5048	POST - 3-1/2" O.D. x 172" STEEL w/ CAP & LBL AT 36"	1

CH0068 - STEEL SUPPORT POST w/ CAP 184 in. (4674 mm)

PART NO.	DESCRIPTION	QTY.
CAP5050	POST - 3-1/2" O.D. x 184" STEEL w/ CAP & LBL AT 36"	1

CH0076 - STEEL SUPPORT POST w/ CAP 200 in. (5080 mm)

PART NO.	DESCRIPTION	QTY.
CAP5052	POST - 3-1/2" O.D. x 200" STEEL w/ CAP & LBL AT 36"	1

CH0256 - STEEL SUPPORT POST w/ CAP 212 in. (5385 mm)

PART NO.	DESCRIPTION	QTY.
CAP0420	POST - 3-1/2" O.D. x 212" STEEL w/ CAP & LBL AT 36"	1

CH0258 - STEEL SUPPORT POST w/ CAP 224 in. (5690 mm)

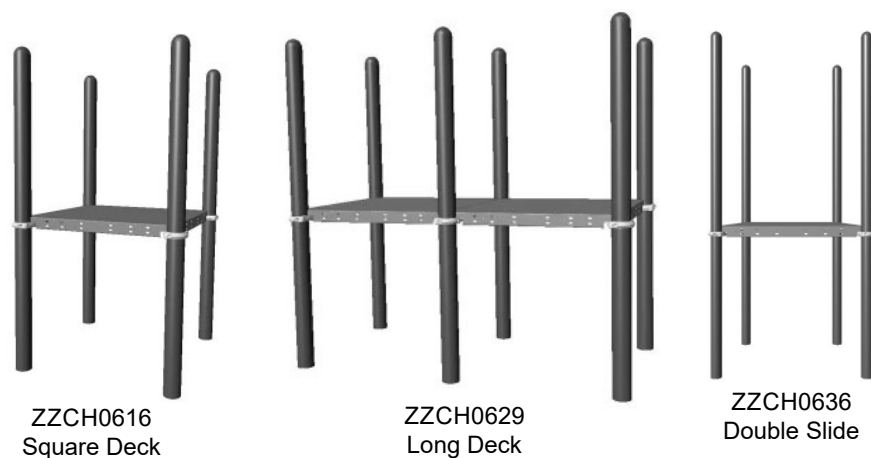
PART NO.	DESCRIPTION	QTY.
CAP0422	POST - 3-1/2" O.D. x 224" STEEL w/ CAP & LBL AT 36"	1



Installation Instructions

Challengers® Models CH0616, CH0629, and CH0636

Square, Long, and Double Slide Perforated Deck


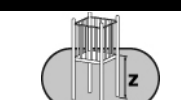
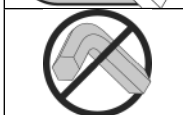


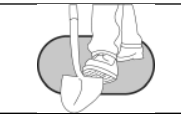



Assembly View

Installation Preparation

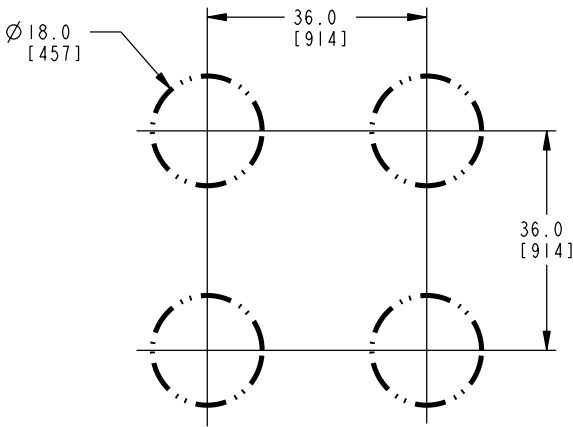
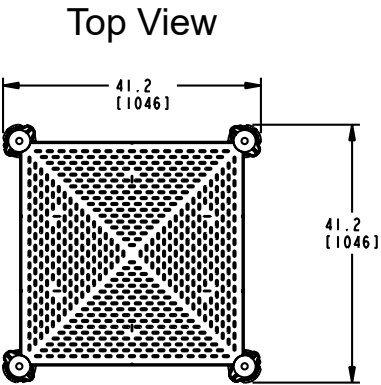
Recommended Crew (CH0616-36):..... Two (2) adults
 Recommended Crew (CH0629):..... Four (4) adults
 Installation Time (CH0616-36): 1 man-hour
 Installation Time (CH0629):..... 2 man-hours
 Use Zone:..... Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY

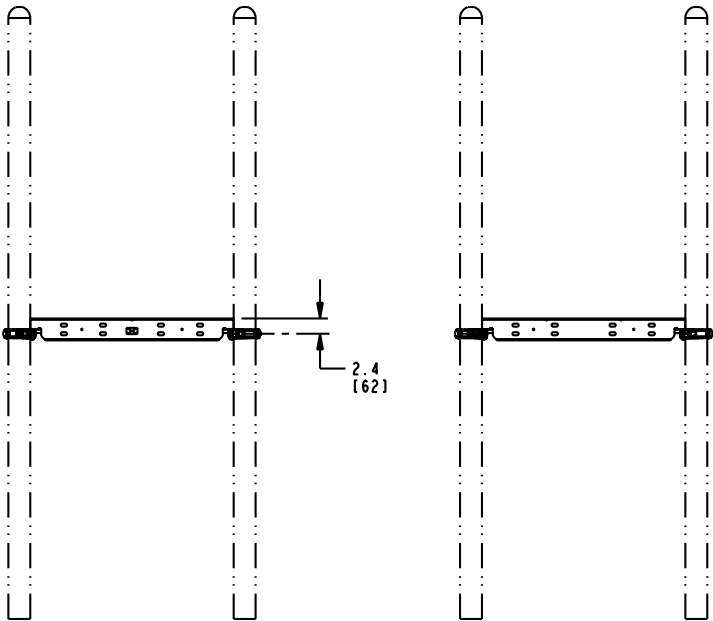
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

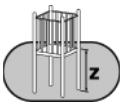
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



Elevation Views
CH0616



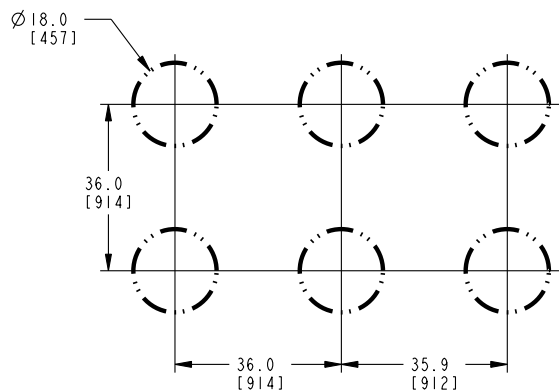
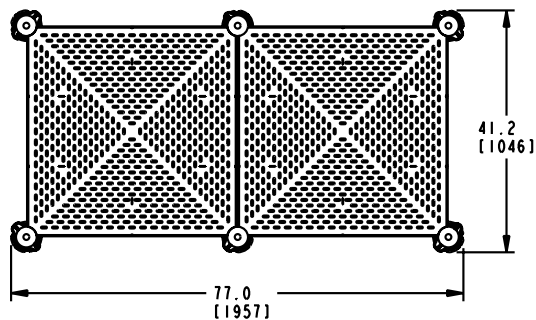
Equal to the height of the deck



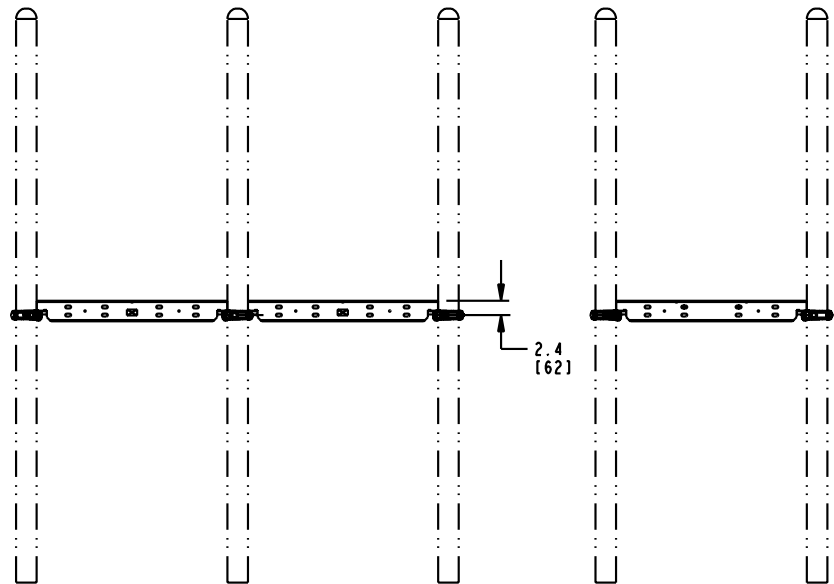
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

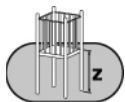
Top View



Footing Diagram



Elevation Views
CH0629

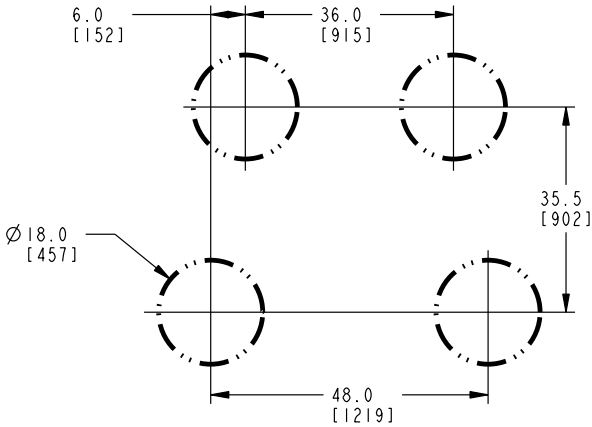
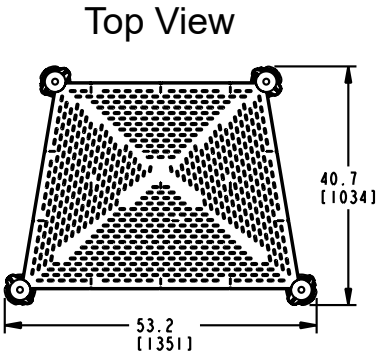


Equal to the height of the deck

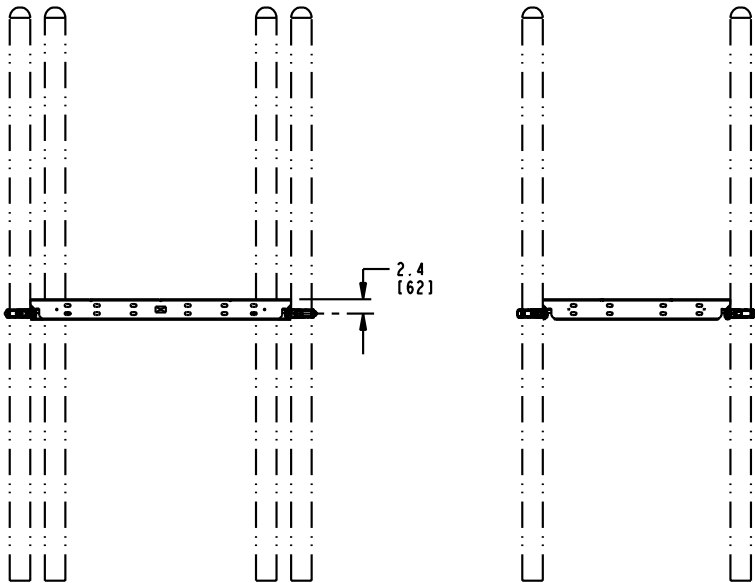


Installation Instructions

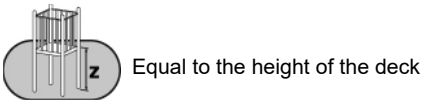
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram

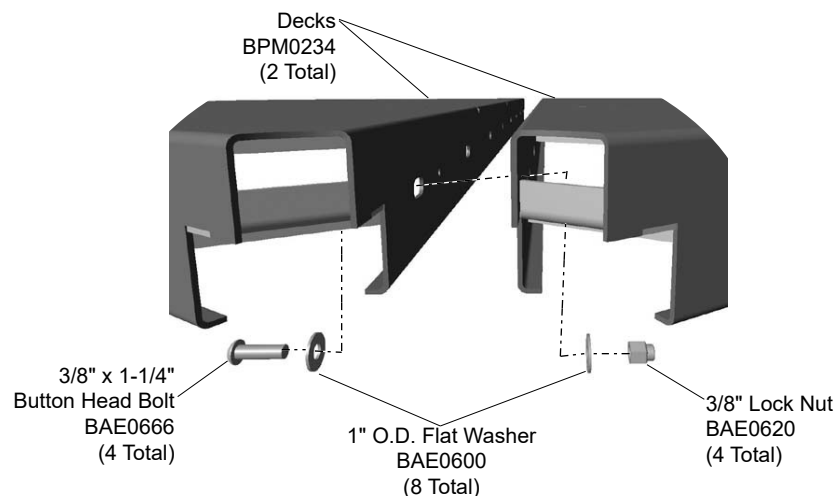


Elevation Views
CH0636



Installation Instructions

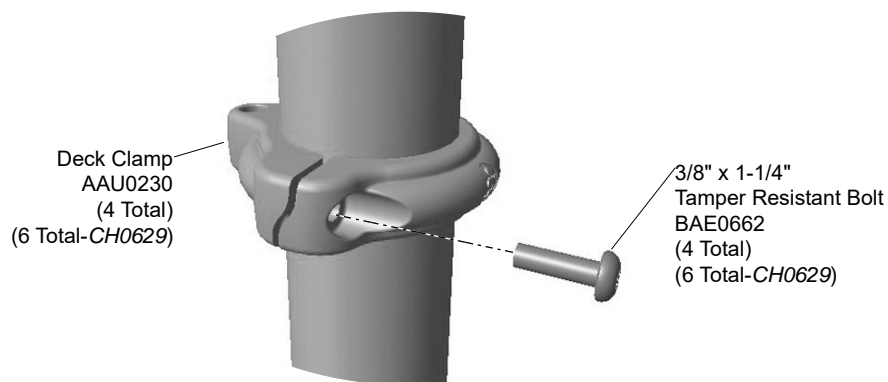
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.



Detail A

Step 3

(Model CH0629 Only)
Attach the two decks together.

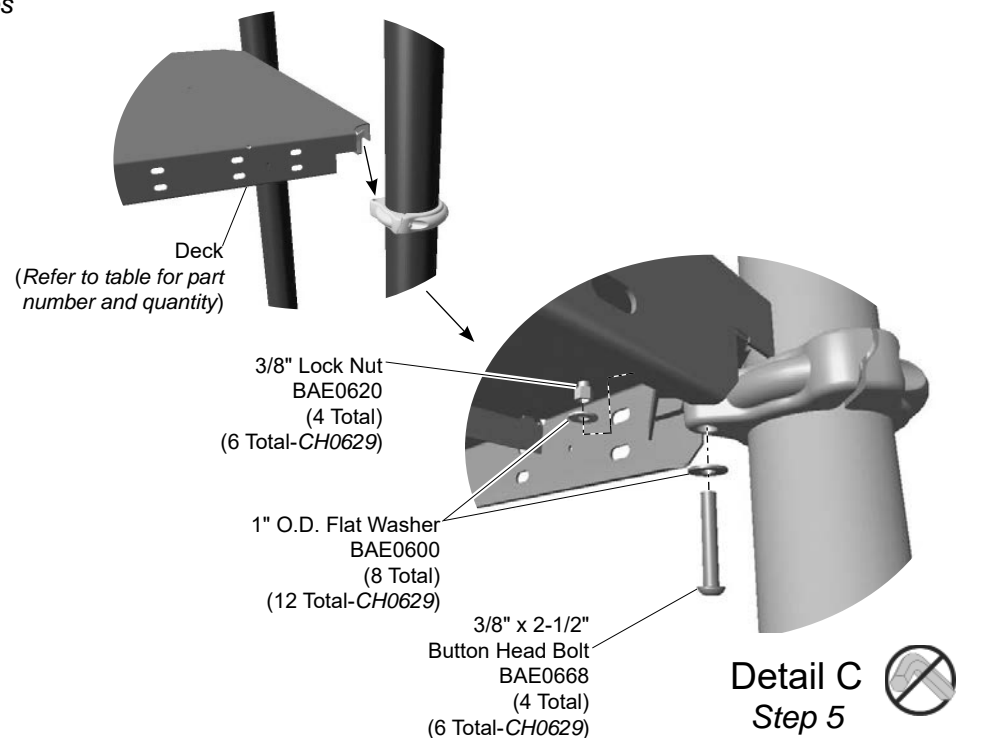


Detail B

Step 4

Attach the deck clamps to the support posts.

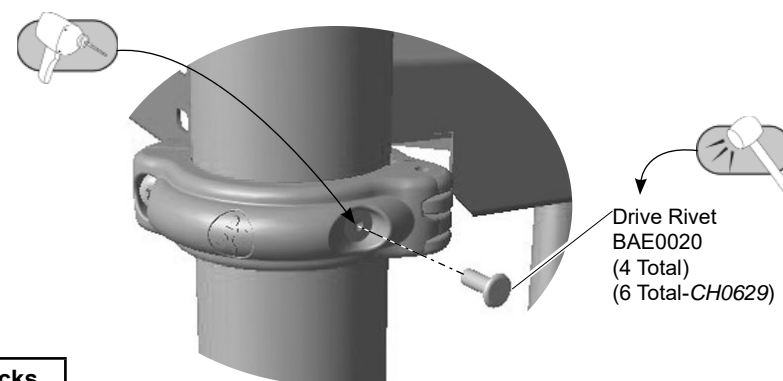
Model	Deck Part No.	No. of Decks
ZZCH0616	BPM0234	1
ZZCH0629	BPM0234	2
ZZCH0636	BPM0236	1



Detail C

Step 5

Attach the decks to the clamps.



Detail D

Step 7

Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware. *Reference the master layout drawing at the beginning of the instruction booklet for location and heights of the decks.*

Step 3: *(Model CH0629 Only)* Attach the two decks together. **See Detail A.** Place both decks upside down on a flat surface. Match the long edges, align the holes, and attach as shown.

Step 4: Attach the deck clamps to the support posts. **See Detail B.** Position the clamps on the post at an appropriate height, and attach as shown. Ensure that all clamps are turned the same way, with deck connection inward.

Step 5: Attach the deck(s) to the clamps. **See Detail C.** Position the deck corners on top of the clamps and attach as shown.

Final Details.

Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 7: Install drive rivets. **See Detail D.** After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH0616 - SQUARE COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	4
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	4
BPM0234	PLATFORM - CH SQUARE PERF	1

CH0636 - DOUBLE SLIDE PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	4
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	4
BPM0236	PLATFORM - CH DOUBLE SLIDE PERF	1

CH0629 - LONG COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	6
BAE0020	RIVET - 1/4" x 11/16" DRIVE	6
BAE0600	WASHER - 1" O.D. FLAT	20
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	10
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	6
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	6
BPM0234	PLATFORM - CH SQUARE PERF	2



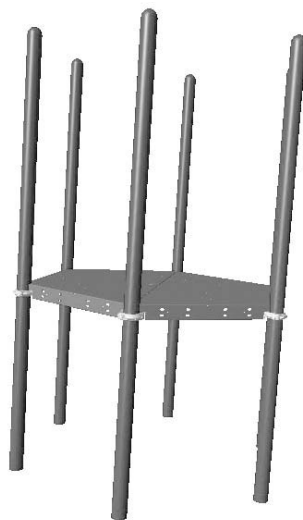
Installation Instructions

Challengers® Models CH0618 and CH0619

Hex and Half Hex Coated Perforated Deck



ZZCH0618
Half Hex Deck





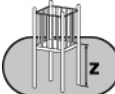
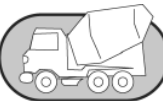



ZZCH0619
Hex Deck

Assembly View

Installation Preparation

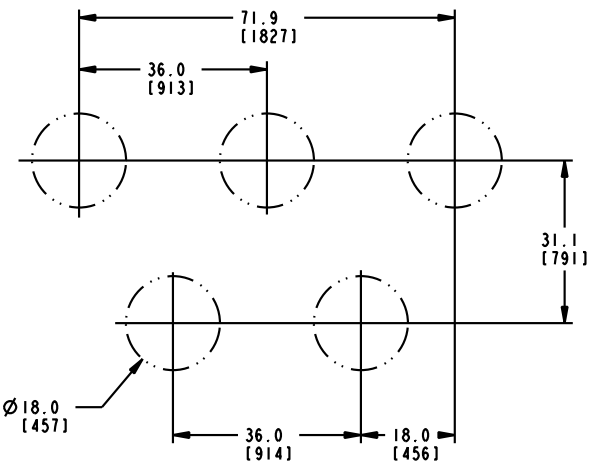
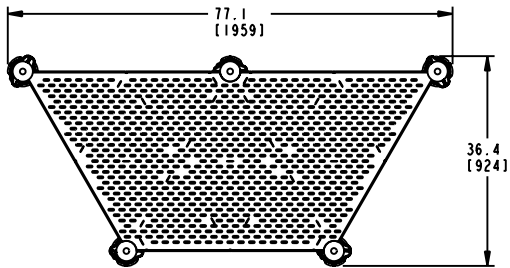
Recommended Crew: Two (2) adults
 Installation Time: 1.5 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY	
	Fully Tighten Hardware
	Do Not Fully Tighten Hardware
	Drill
	Hammer
	Critical Fall Height
	Pour Concrete
	Dig Footing Holes

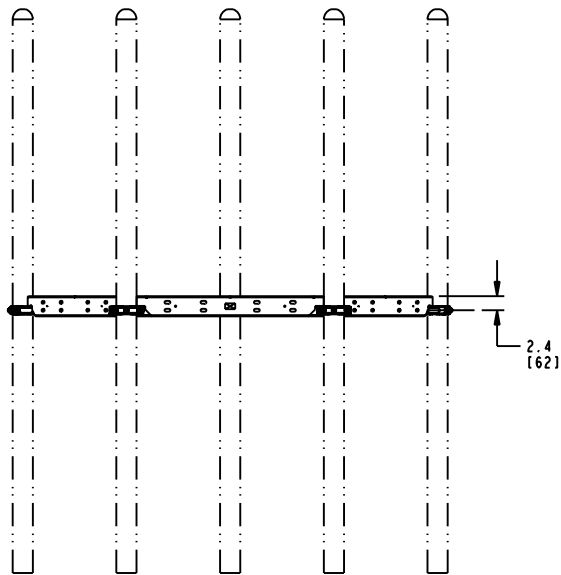
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

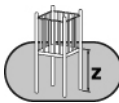
Top View



Footing Diagram



Elevation View
CH0618

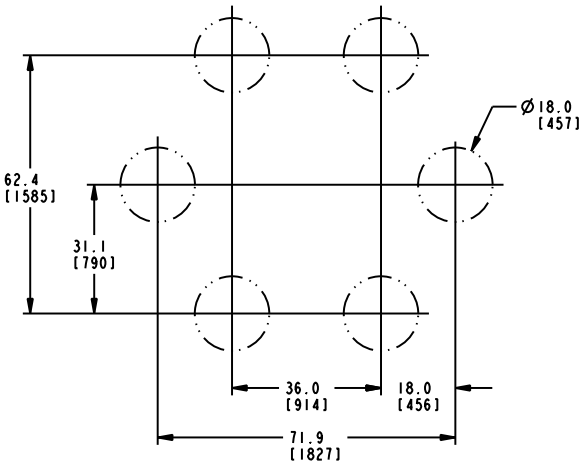
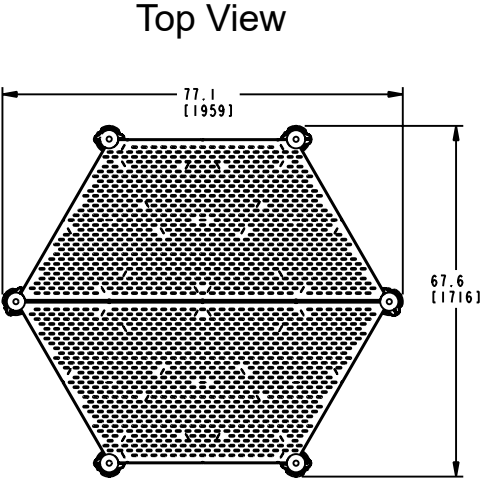


Equal to the height of the
deck

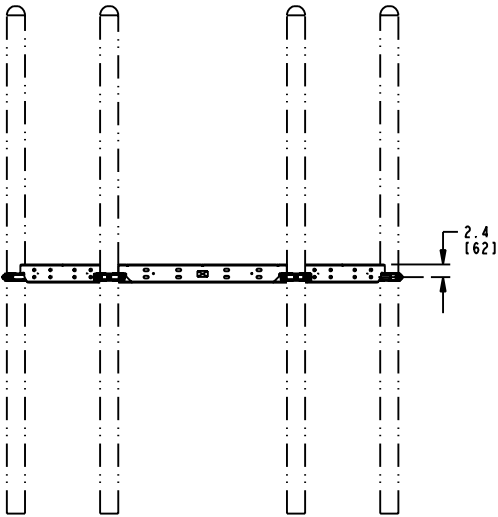


Installation Instructions

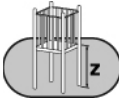
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



Elevation View
CH0619

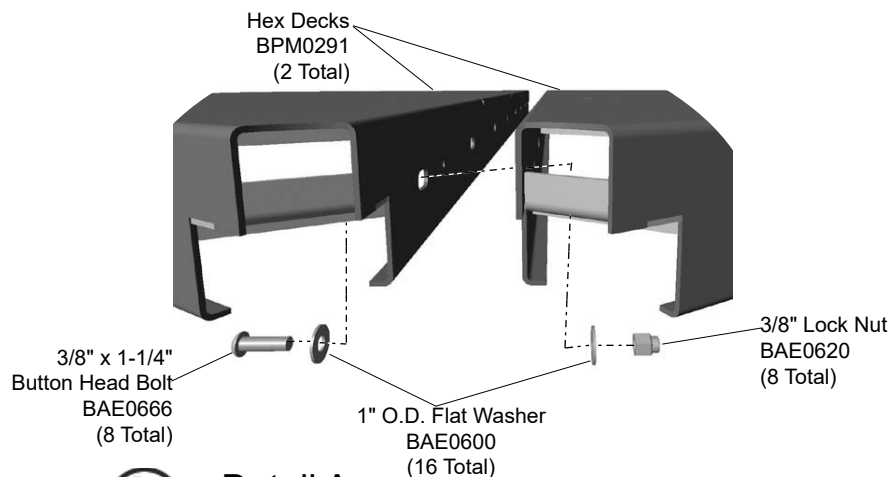


Equal to the height of the deck



Installation Instructions

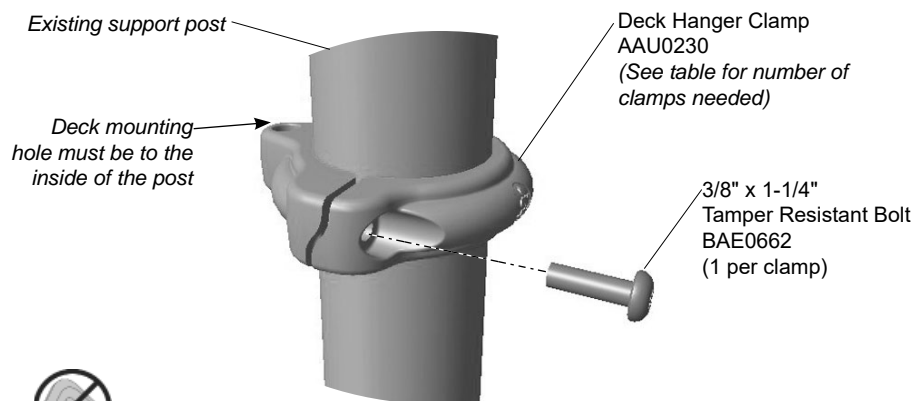
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A
Step 4

(Model CH0619 Only)

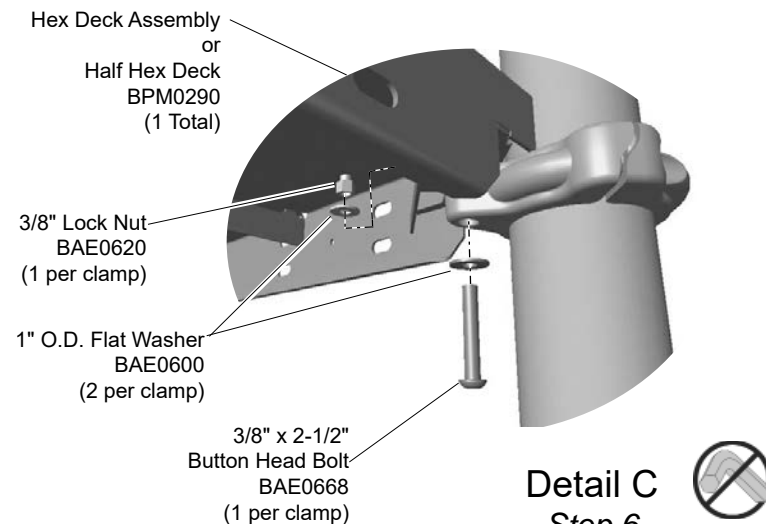
Attach the hex decks together.



Detail B
Step 5

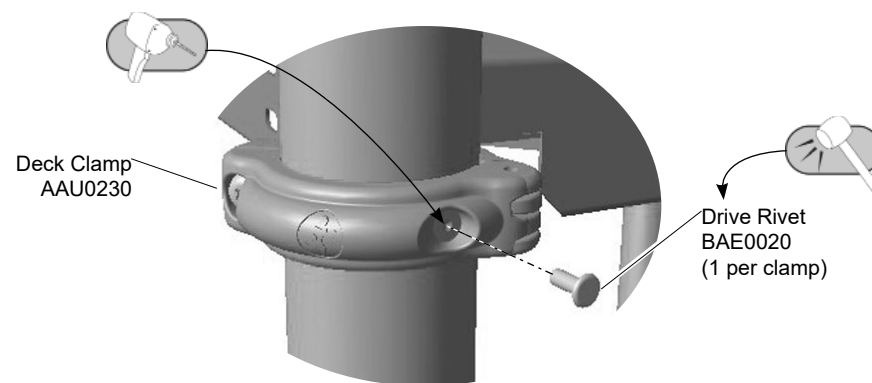
Attach the deck hanger clamps to the support posts.

Model	Deck Shape	Number of Clamps
ZZCH0618	Half Hex Deck	5
ZZCH0619	Hex Deck	6



Detail C
Step 6

Attach the deck to the deck hanger clamps.



Detail D
Step 8

Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine the location of your decks by referring to your master footing diagram.

Step 4: Connect the decks. **See Detail A.** If there is only one deck go to **Step 5.** Place both decks upside down on a flat surface. Match the long edges, align holes and attach as shown.

Step 5: Attach the clamps to the post. **See Detail B** and **Elevation View.** Position the deck clamps on the support posts so that the top of the clamp is 1-3/4 in. (43 mm) below the suggested deck height. Ensure deck mount portion of the clamp points inward from the post. Attach as shown.

Step 6: Attach the hex deck assembly or the half hex deck to the clamps. **See Detail C.** With adequate manpower, lift the deck onto the clamps, align the holes in the deck with those in the clamps and attach as shown.

Note: For the hex deck assembly each deck must be attached to (3) three clamps.

Final Details.

Step 7: Square and level the support posts and deck assembly. Check to ensure deck assembly is at the specified height above the surfacing material level. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 8: Install drive rivets. **See Detail D.** After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH0618 - HALF HEX COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	5
BAE0020	RIVET - 1/4" x 11/16" DRIVE	5
BAE0600	WASHER - 1" O.D. FLAT	10
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	5
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	5
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	5
BPM0290	PLATFORM - CH HALF HEX PERF	1

CH0619 - HEX COATED PERFORATED DECK

PART NO.	DESCRIPTION	QTY.
AAU0230	CLAMP - 3-1/2" DECK DIE CAST	6
BAE0020	RIVET - 1/4" x 11/16" DRIVE	6
BAE0600	WASHER - 1" O.D. FLAT	28
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	14
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	6
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	8
BAE0668	BOLT - 3/8"-16 x 2-1/2" BUTTON HEAD - SS	6
BPM0291	PLATFORM - CH HEX PERF	2



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Assembly View (representative model)

Installation Instructions

Challengers® Models CH0684 and CH0684S

Nuvo™ Transfer Station


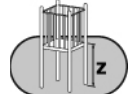

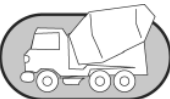



48 in. (1219 mm) Deck

In-Ground and Surface Mount

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time (In-ground): 4 man-hours
 Installation Time (Surface Mount): 2 man-hours
 Concrete Required: 0.12 cubic yard (0,08 cubic meters)
 Use Zone: Refer to the master layout drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

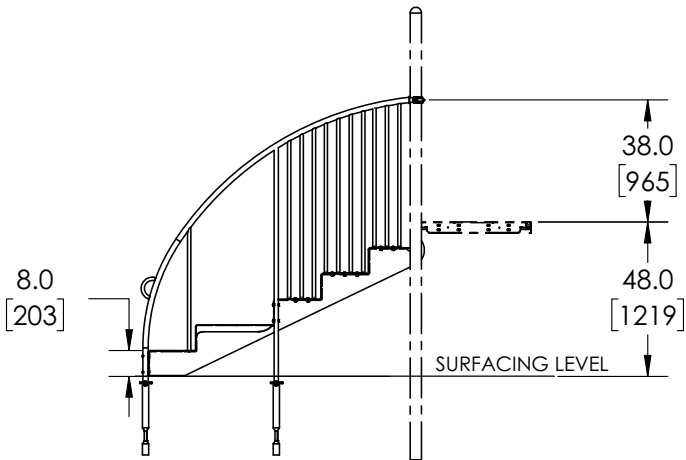
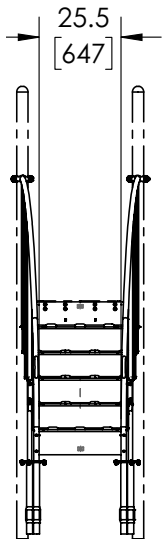
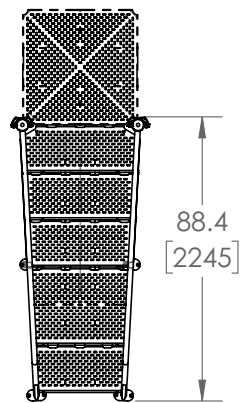
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

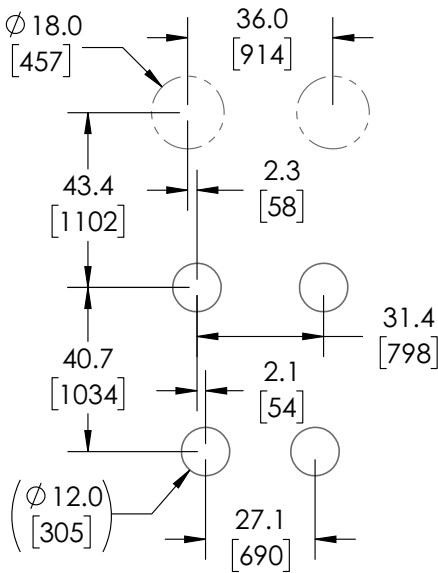
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

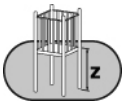
Top View



Elevation Views
CH0684



Footing Diagram
(Both Models)



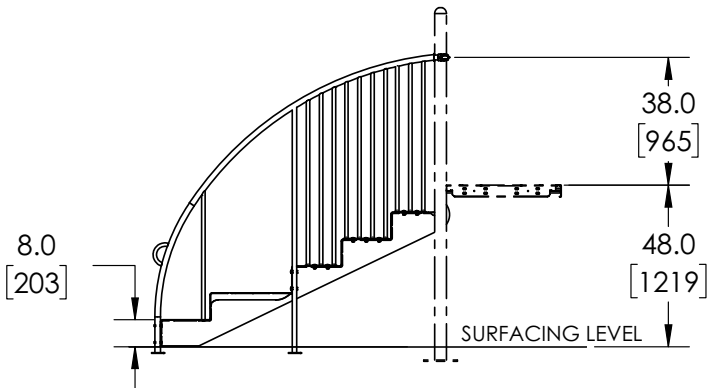
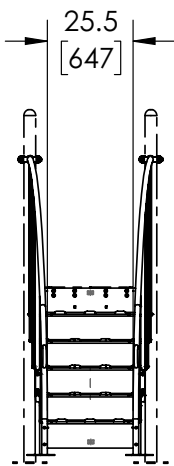
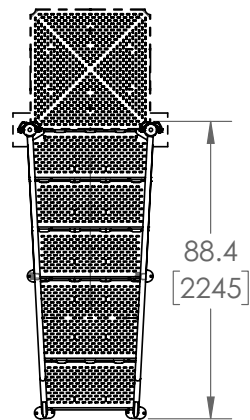
Height of the deck



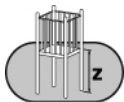
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



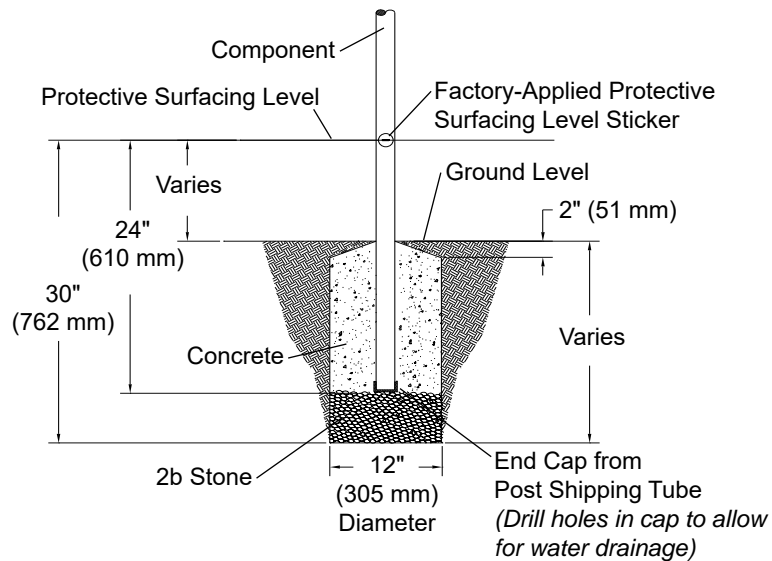
Elevation Views
CH0684S



Height of the deck



Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

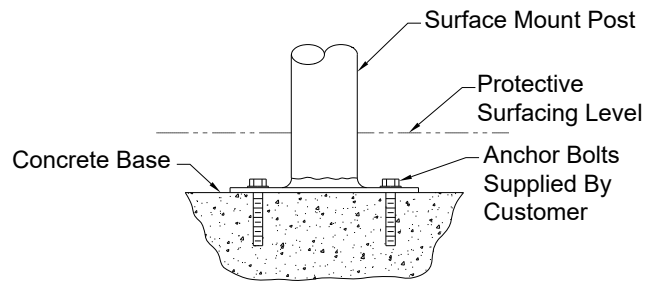
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

SURFACE MOUNT FOOTING DIAGRAMS: SUPPORT POSTS AND COMPONENTS



Surface Mount Footing Detail

DEFINITIONS

- **Concrete Pier:** A pier type surface mount installation is defined as a footing hole that has been excavated and poured with concrete. Concrete should be flush to the top surface of excavated hole. Equipment would then be secured to this concrete footing that has been properly cured.
- **Concrete Slab:** Existing concrete slab type installation is defined as equipment being secured to an existing concrete pad or slab. As an example, this pad could be in the form of an existing concrete parking lot.

FOOTING NOTES: PIER TYPE SURFACE MOUNT

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.

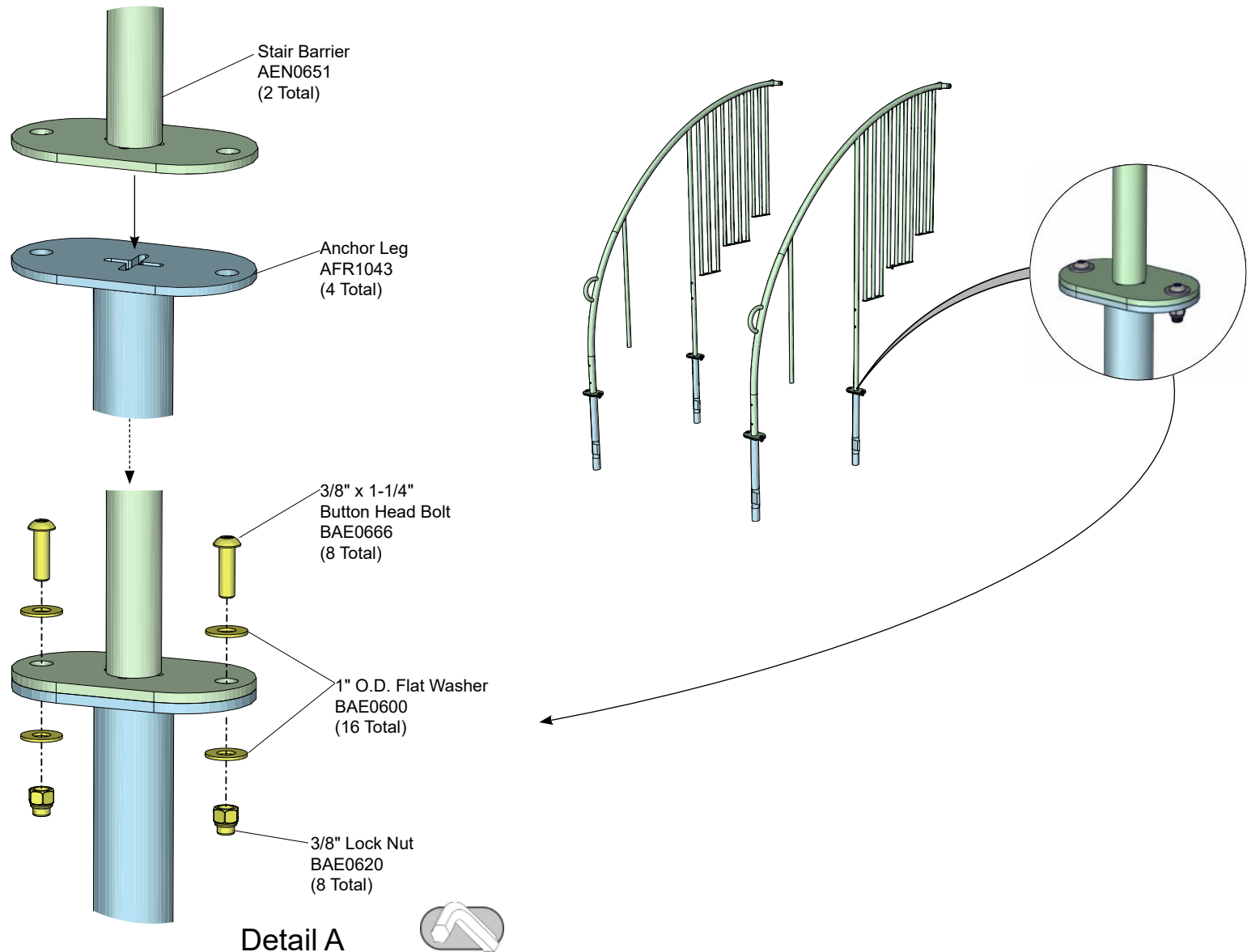
FOOTING NOTES: EXISTING CONCRETE SLAB TYPE SURFACE MOUNT

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- Support posts and all attaching decks and play components must be plumb and level.

IMPORTANT NOTE: Surface mount hardware is not supplied. The customer is responsible for the concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

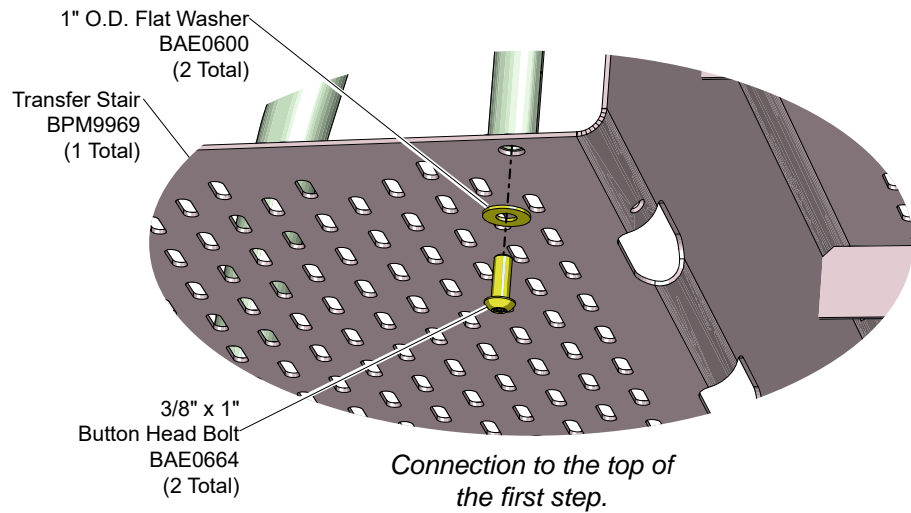
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 11.

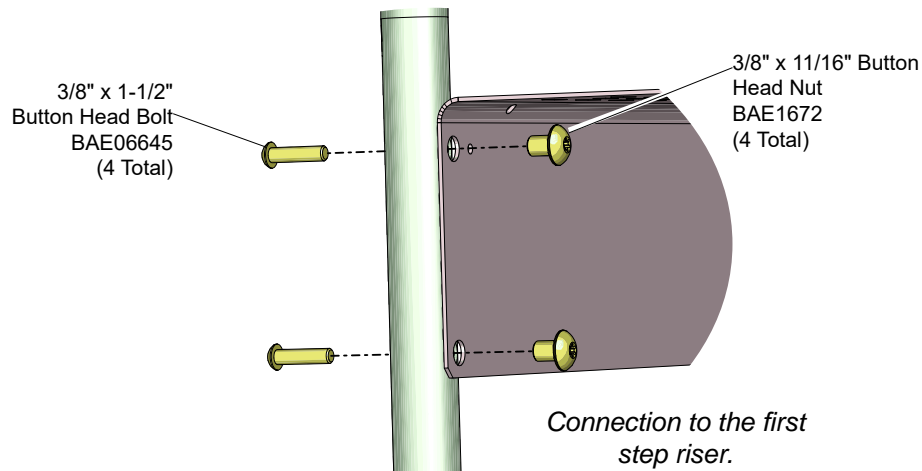


Step 4 (In-Ground Model only)
Attach the anchor legs to the stair barriers.

Installation Instructions

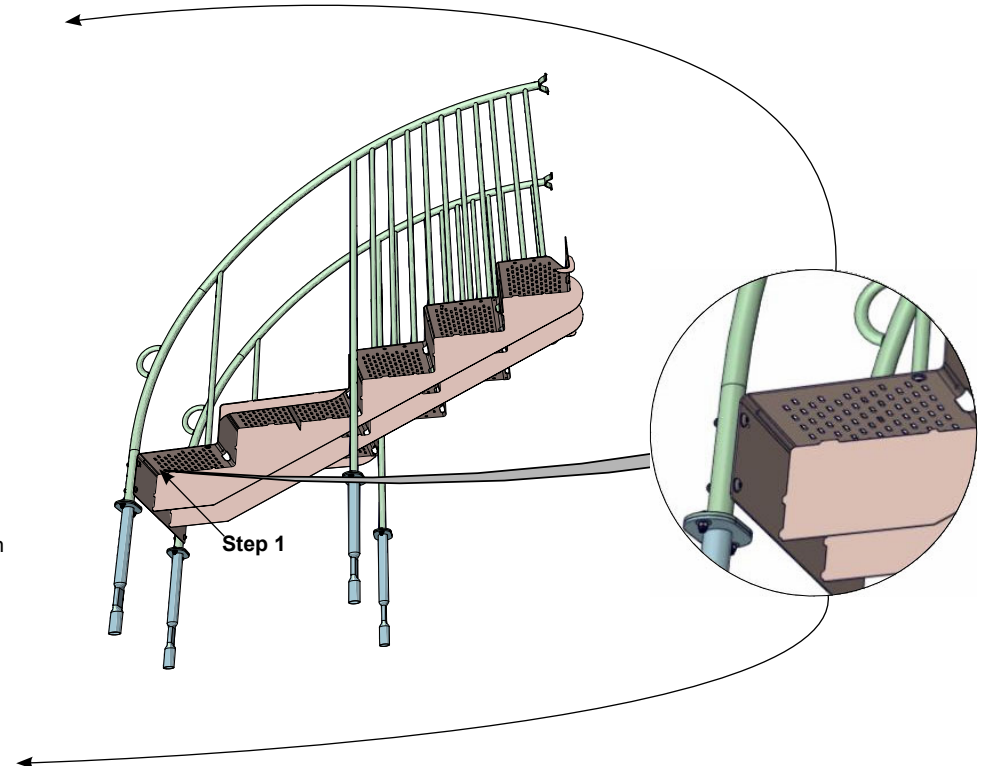


*All views are from
underneath the stair.*

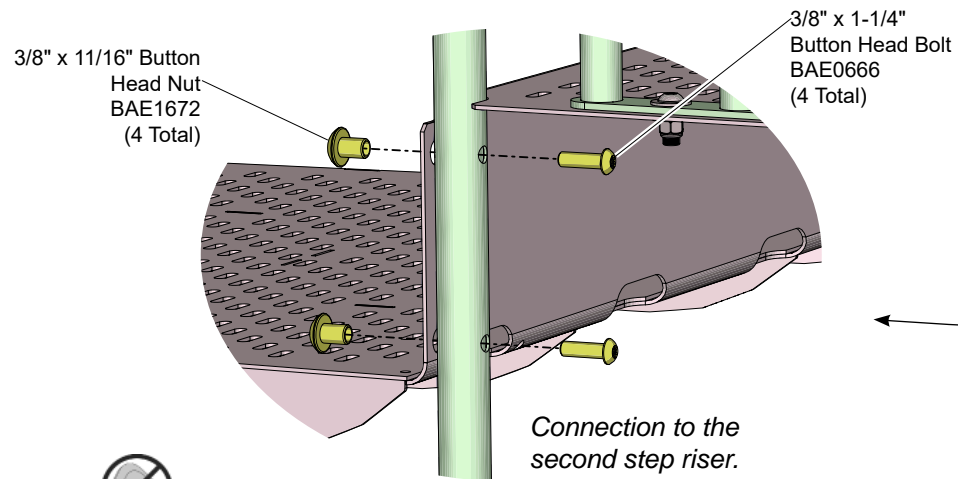
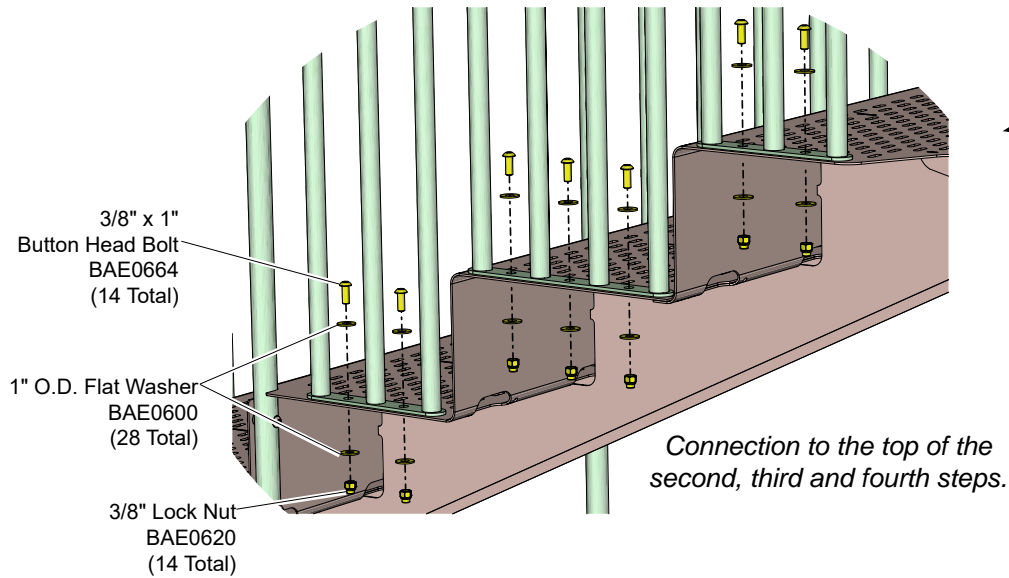


Detail B Step 5

Attach the stair barriers to the first step on the transfer stair.

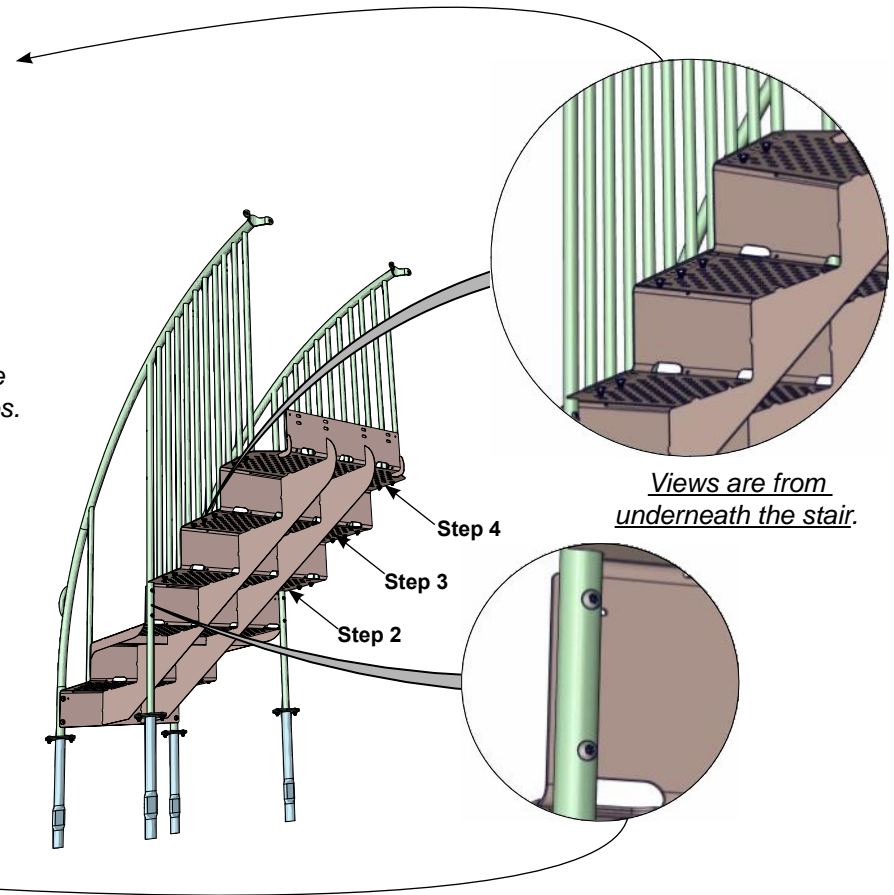


Installation Instructions

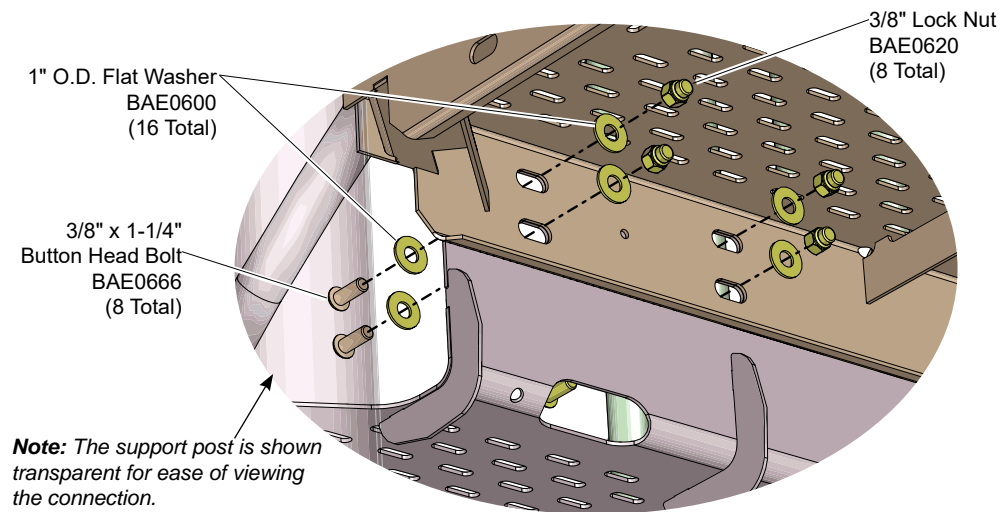


Detail C Step 6

*Attach the stair barriers to the second, third and
fourth steps on the transfer stair.*

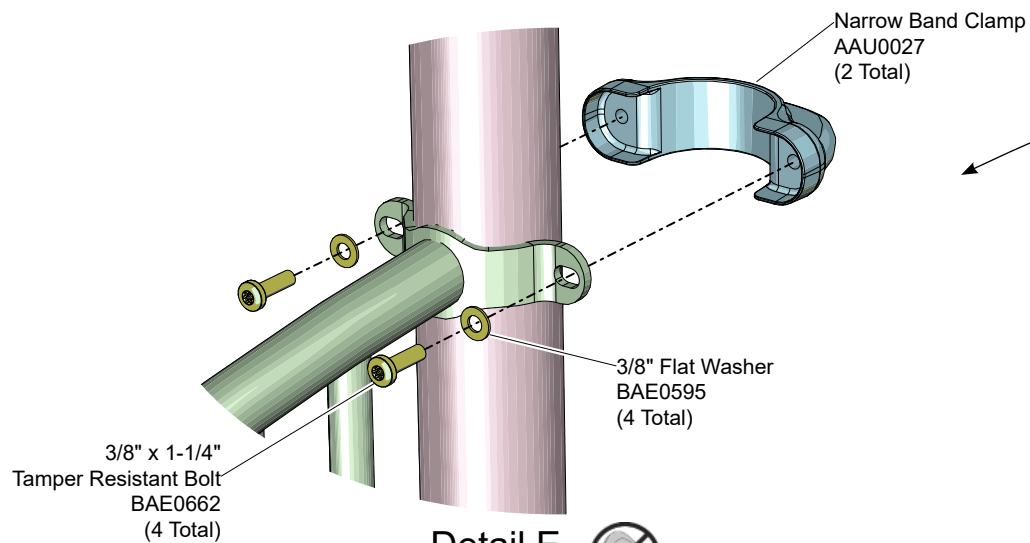
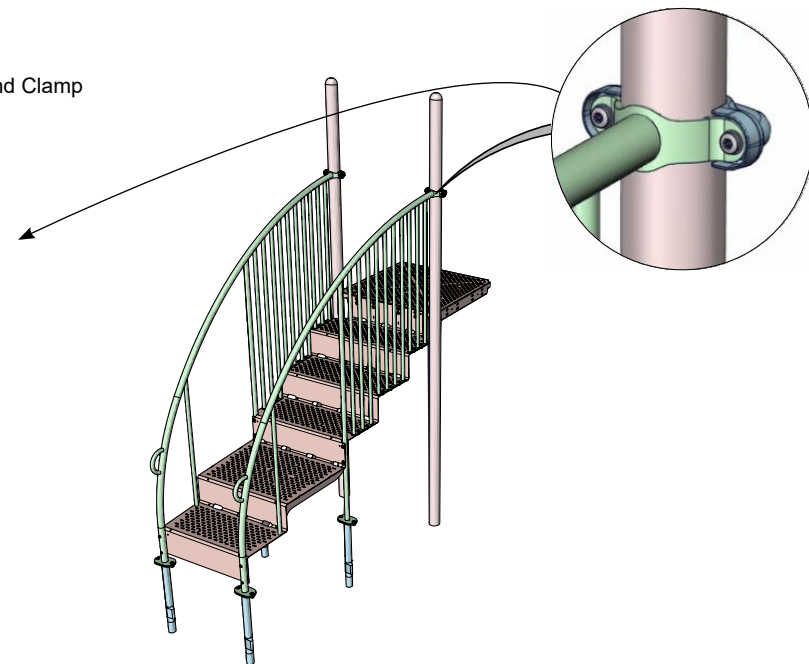
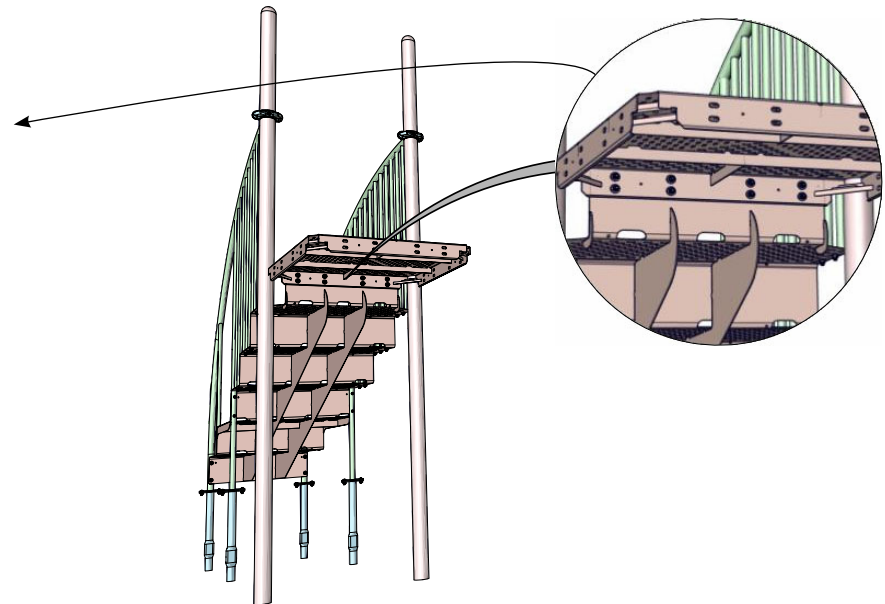


Installation Instructions



Detail D
Step 7

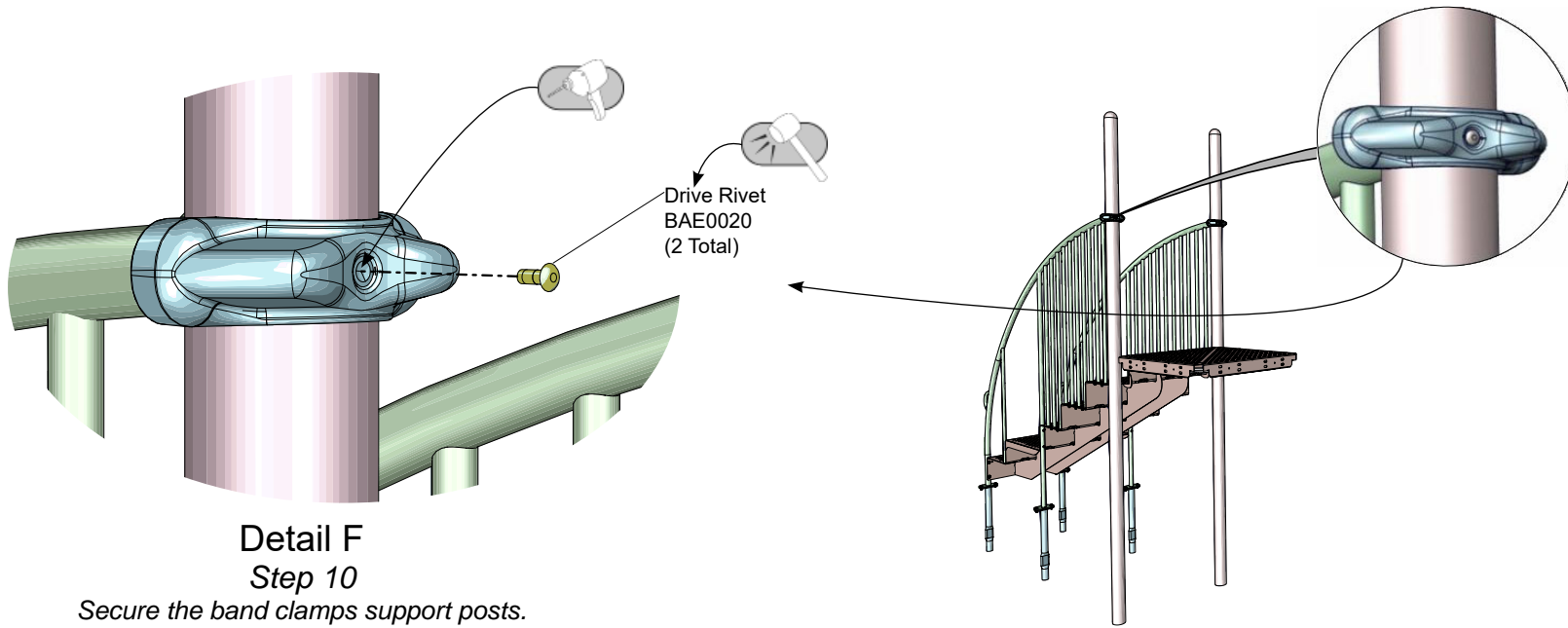
Attach the transfer stair to the existing deck.



Detail E
Step 8

Attach the stair barriers to the existing support posts.

Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate / prepare footings as shown in the **Component Post/Surface Mount Footing Details** in the *Challenger Guidelines* at the beginning of this instruction booklet and on pages 4 and 5 of this installation document.

Step 4: Attach the anchor legs to the stair barriers (*In-Ground Model only*). See **Detail A**. Position the mounting plate on each anchor leg against a mounting plate on the stair barriers and attach as shown. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 5: Attach the stair barriers to the first step on the transfer stair. See **Detail B**. Position the stair barriers against the sides of the transfer stair and attach the lower end of the barriers to the top and step riser of the first step as shown.

Step 6: Attach the stair barriers to the second, third and fourth steps on the transfer stair. See **Detail C**. Attach the barriers to the top of the second, third and fourth steps and the second step riser as shown.

Step 7: Attach the transfer stair to the existing deck. See **Detail D**. Position the top of the transfer stair against the deck, with barrier clamp bands around the support posts, and attach as shown.

Step 8: Attach the stair barriers to the existing support posts. See **Detail E**. Attach as shown.

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 10: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

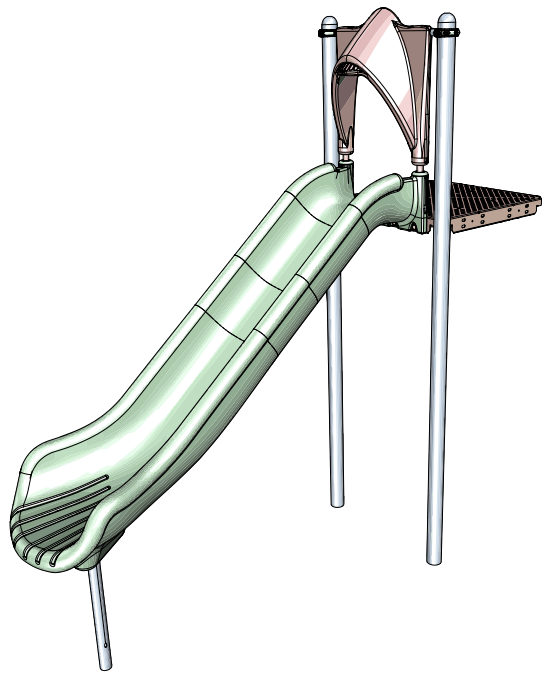
CH0684 - NUVO™ TRANSFER STATION 48 in. (1219 mm) DECK

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3.50" NARROW ALUMINUM BAND	2
AEN0651	BARRIER - 48" NUVO TRANSFER STATION (CH)	2
AFR1043	FRAME- PLAY SIMPLE LEG(ROUND)	4
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0600	WASHER - 1" O.D. FLAT	62
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	30
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESISTANT w/TORX DRV	4
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	16
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	20
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	8
BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	4
BPM9969	STAIR - NUVO TRANSFER - 48" - (CH)	1

CH0684S - NUVO™ TRANSFER STATION 48 in. (1219 mm) DECK SM

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3.50" NARROW ALUMINUM BAND	2
AEN0651	BARRIER - 48" NUVO TRANSFER STATION (CH)	2
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0600	WASHER - 1" O.D. FLAT	46
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	22
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESISTANT w/TORX DRV	4
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	16
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	12
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	8
BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	4
BPM9969	STAIR - NUVO TRANSFER - 48" - (CH)	1





Assembly View (representative model)

Model	Deck Height
CH3127	36" (915 mm)
CH3126	48" (1220 mm)
CH2658	60" (1525 mm)
CH2696	72" (1830 mm)

Installation Instructions




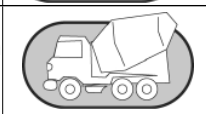



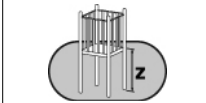
Challengers®

Models CH2658, CH2696, CH3126-CH3127
36"-72" (914-1829 mm) Glide Slides

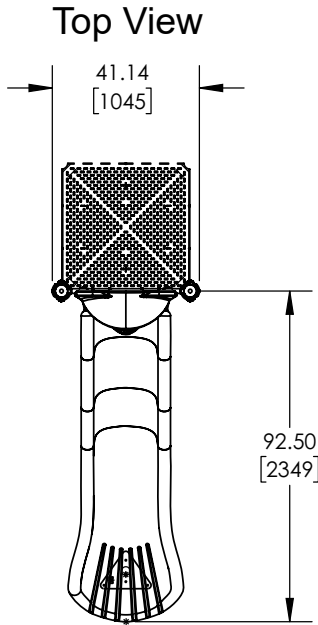
Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 1.5 man-hours
 Concrete Required: 0.03 cubic yard (0.02 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

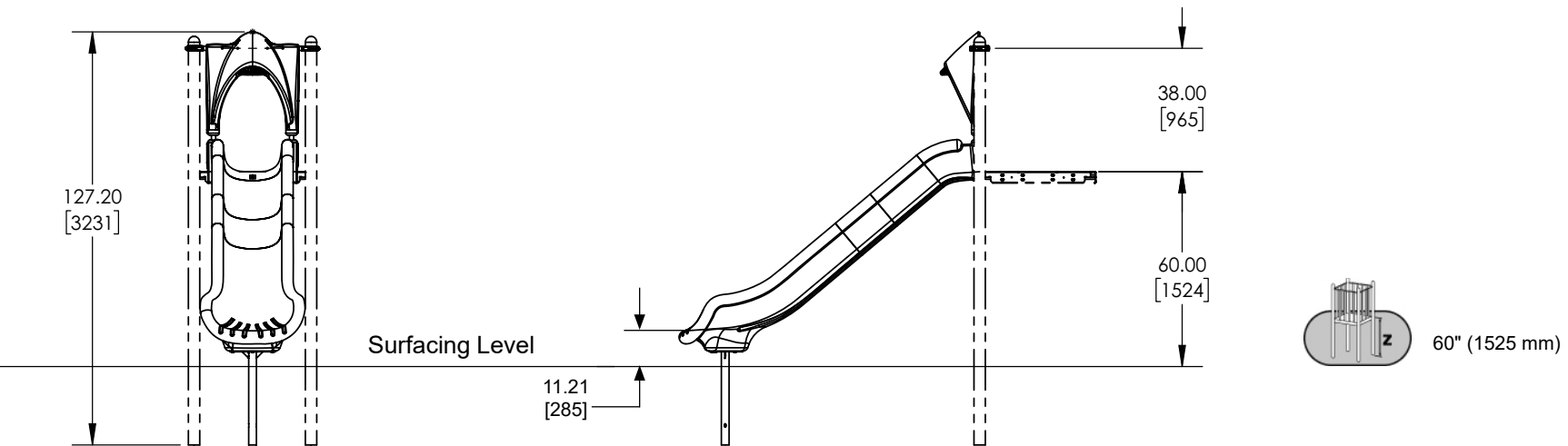
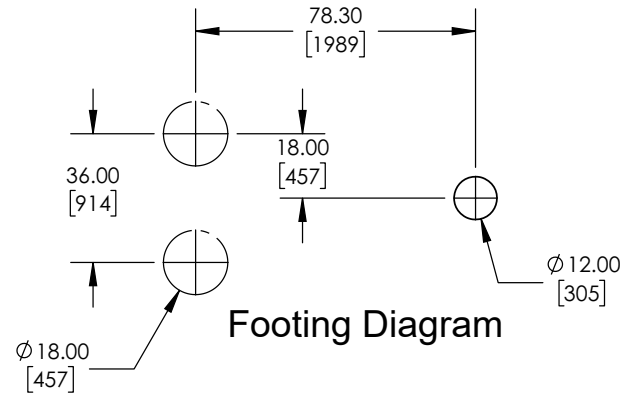
ICON KEY

	Fully Tighten Hardware		Add 1 Drop of Thread Locking Adhesive
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		Critical Fall Height

Installation Instructions



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



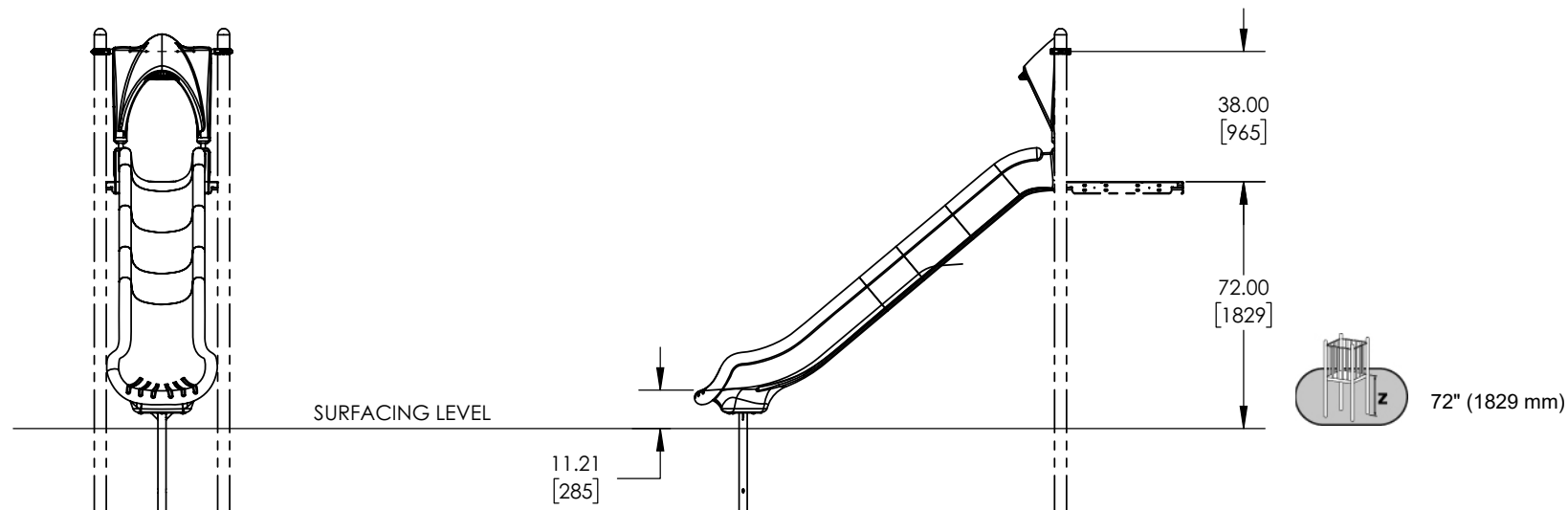
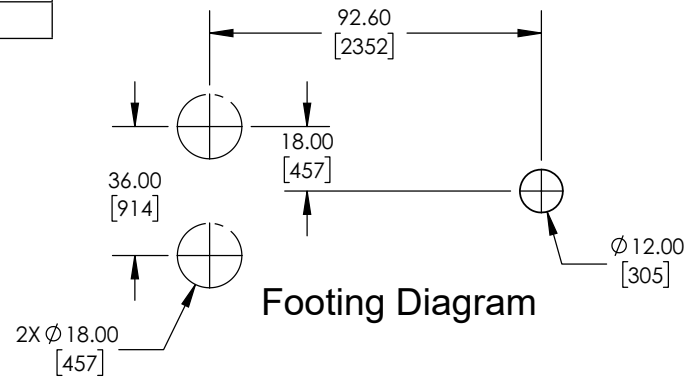
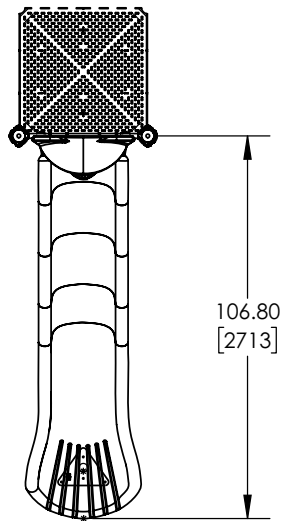
Elevation Views
CH2658



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View

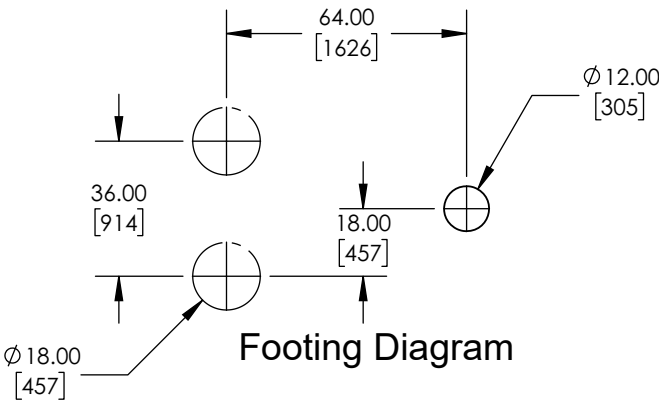
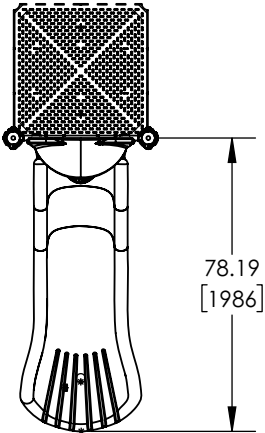


Elevation Views
CH2696

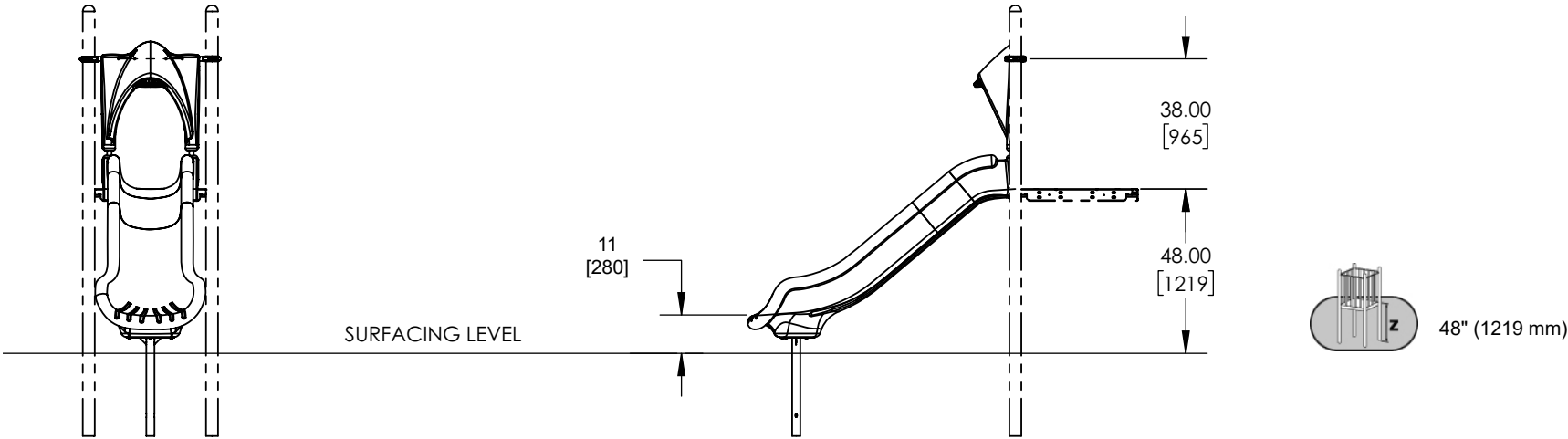
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram

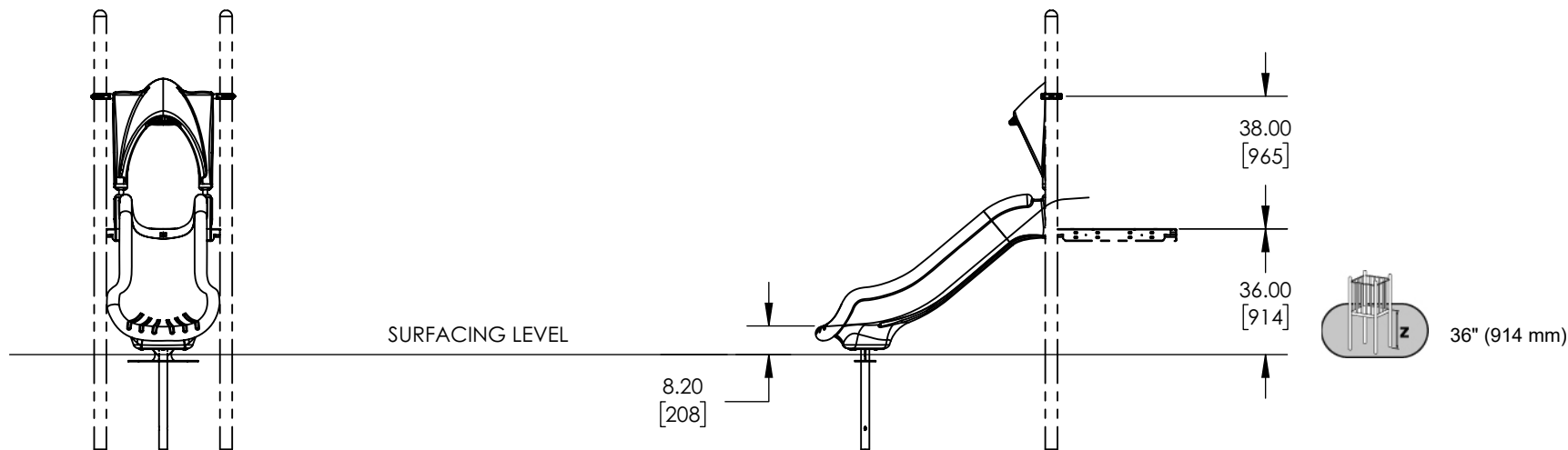
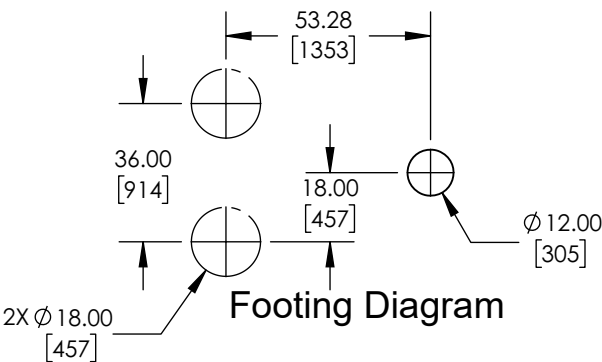
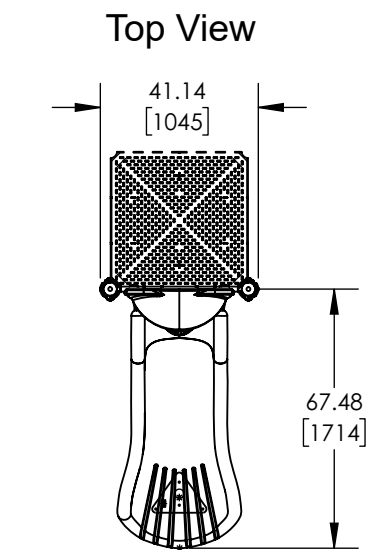


Elevation Views
CH3126



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

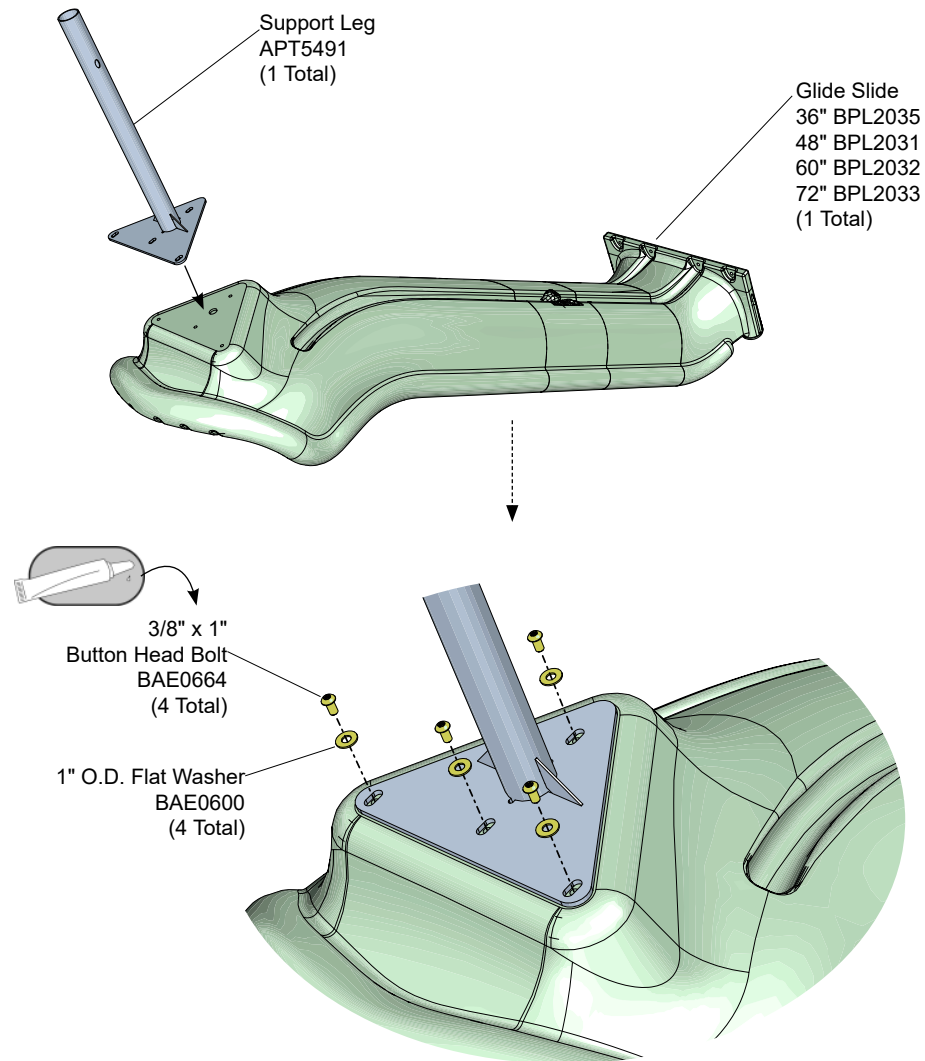


Elevation Views
CH3127



Installation Instructions

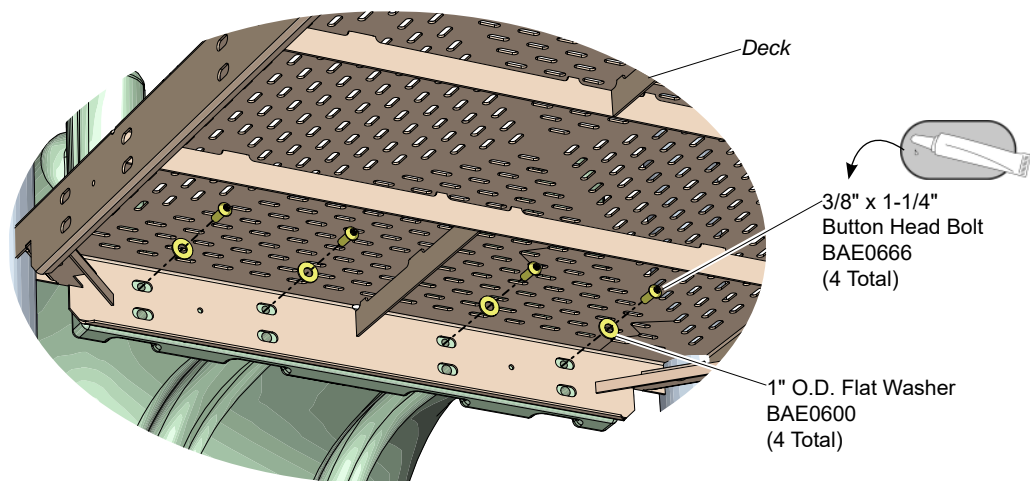
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 11.



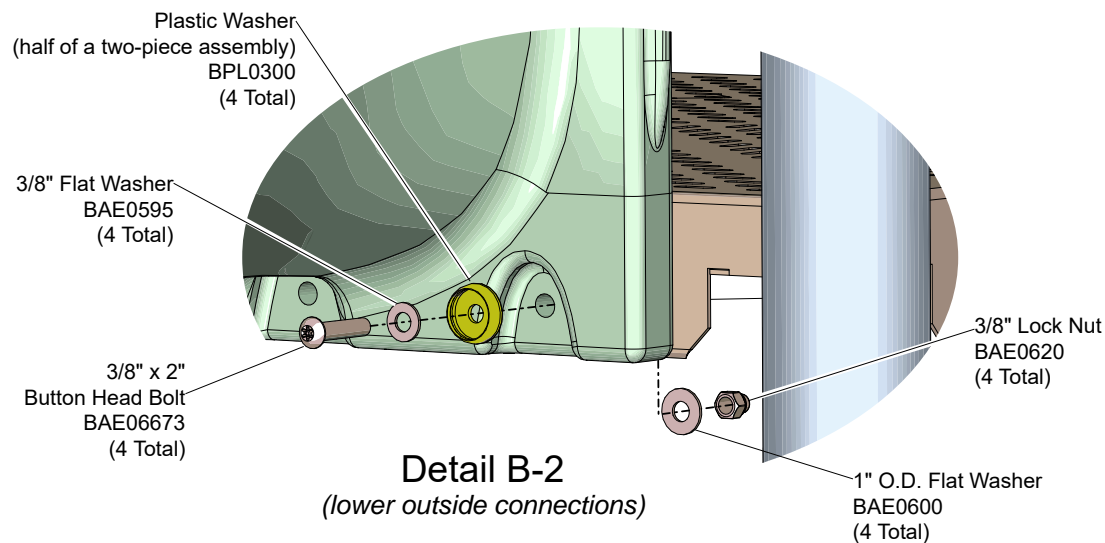
Detail A Step 4

Attach the support leg to the slide.

Installation Instructions



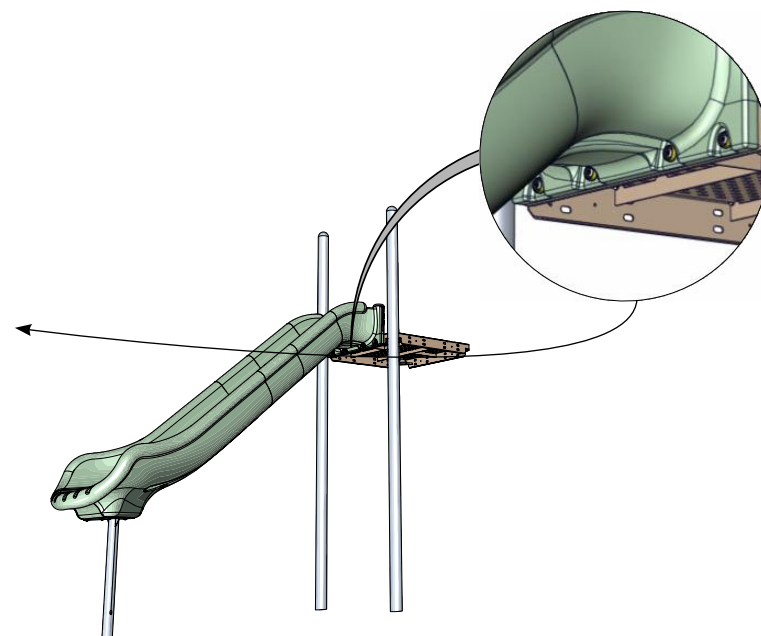
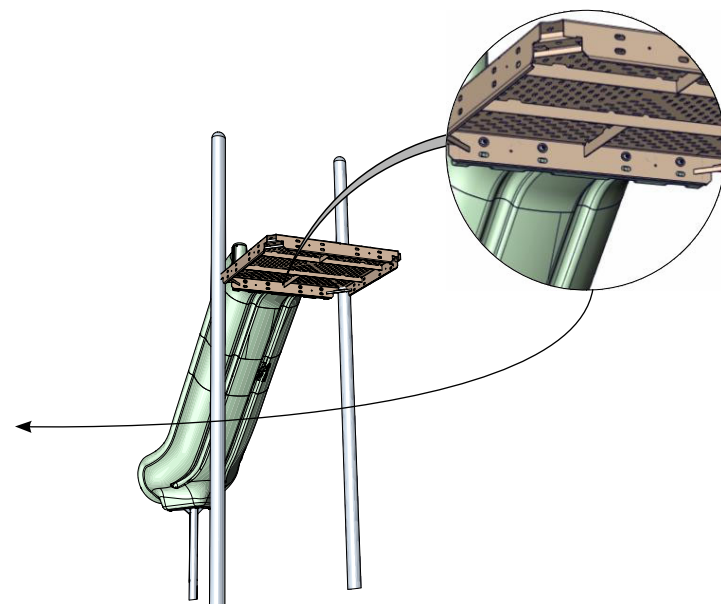
Detail B-1
(upper inside connections)



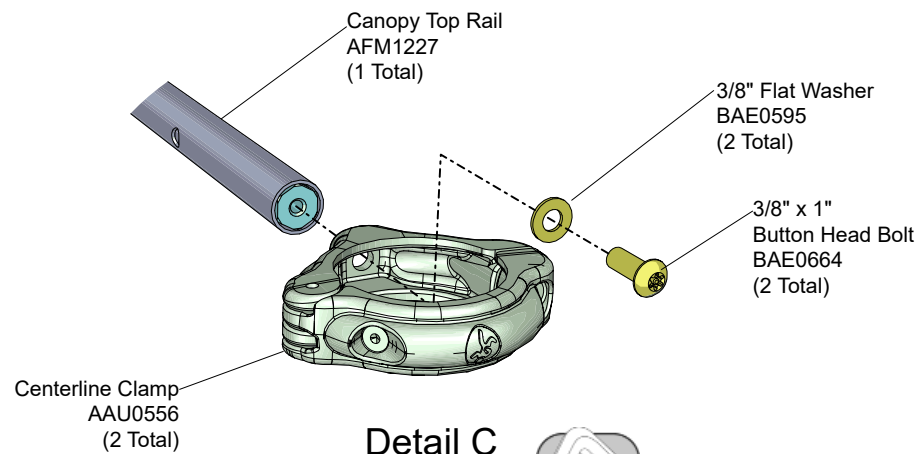
Detail B-2
(lower outside connections)



Details B-1 and B-2
Step 5
Attach the slide to the deck.

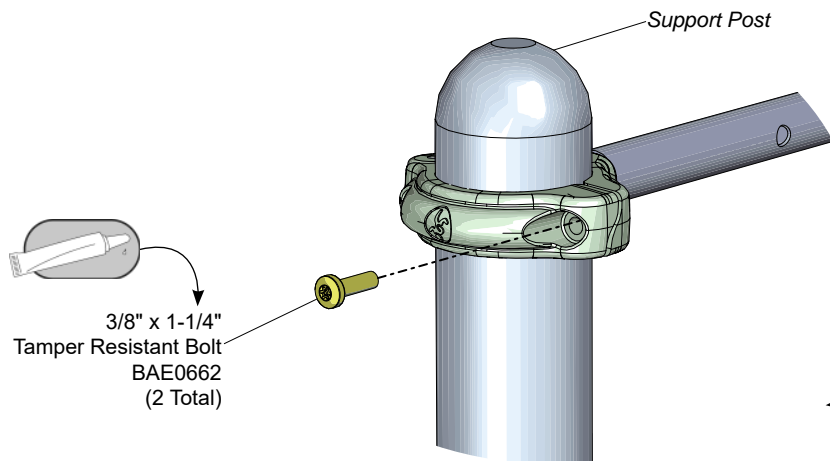
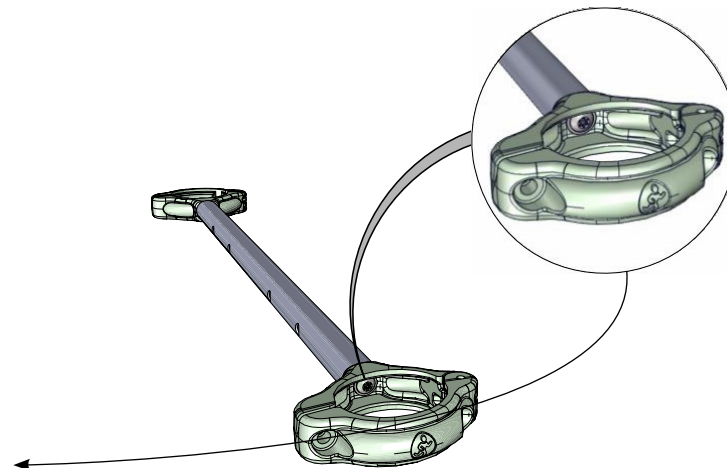


Installation Instructions



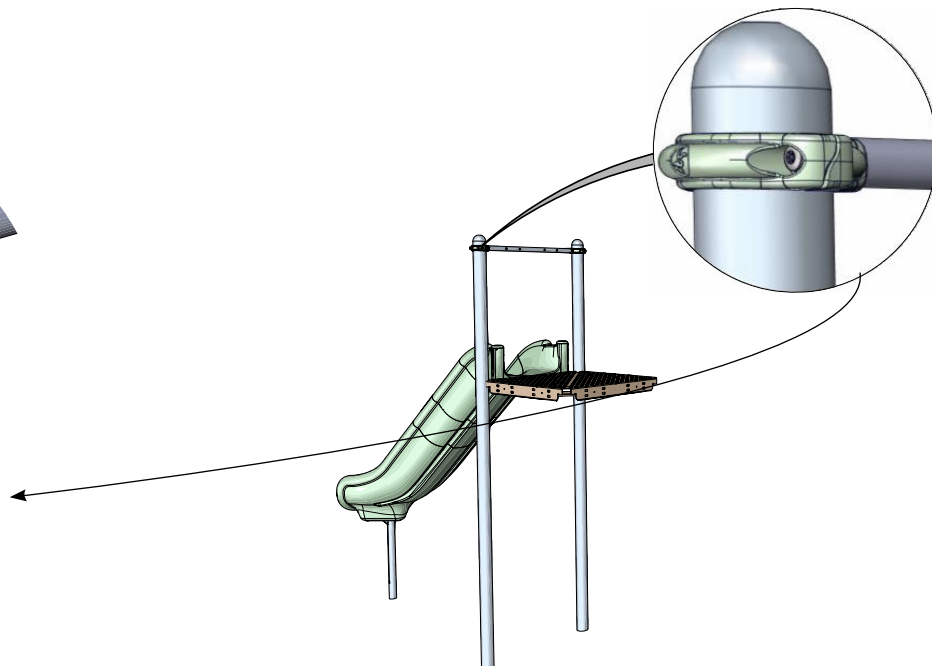
Detail C Step 6

Attach the clamps to the canopy top rail.

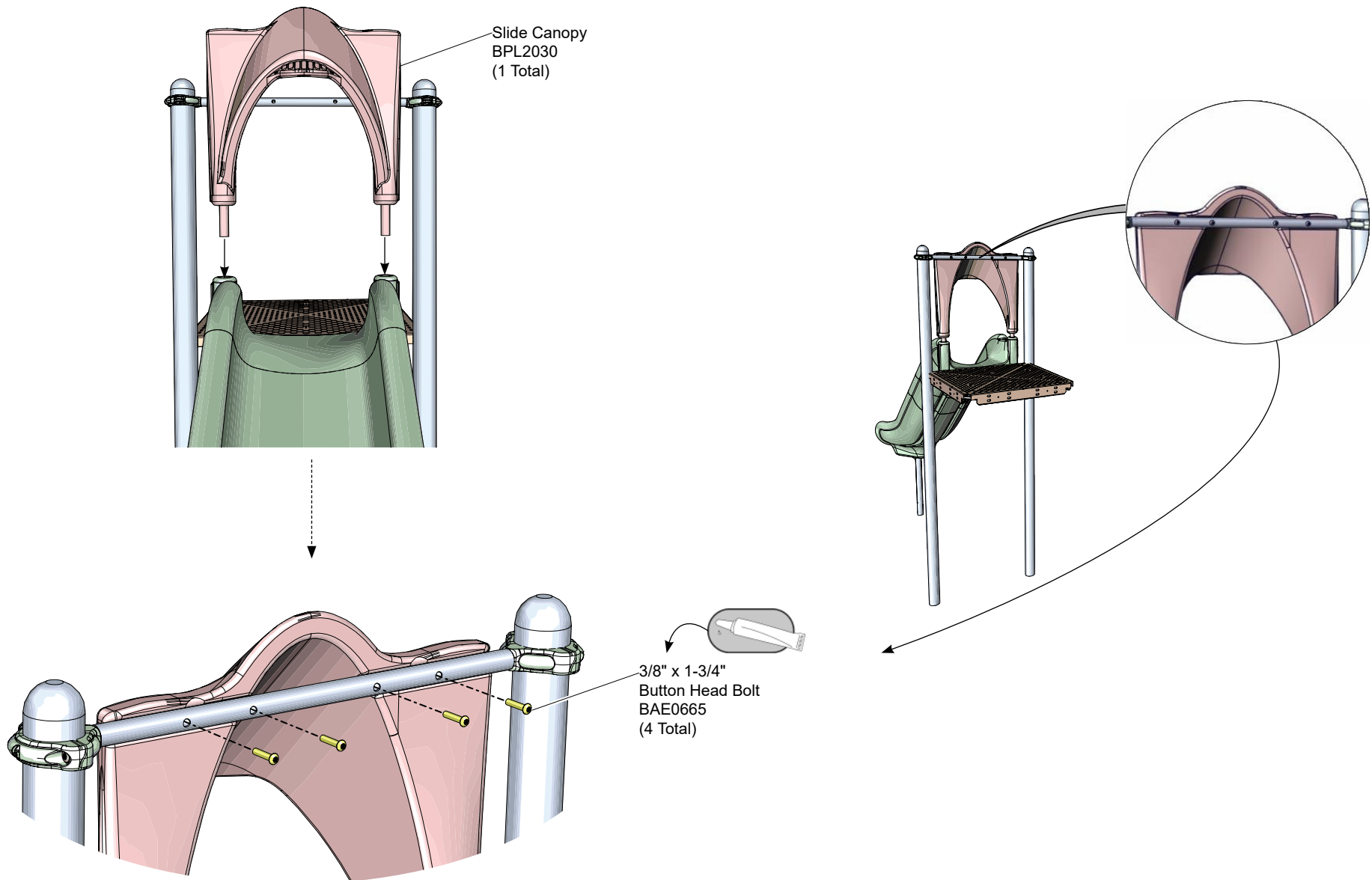


Detail D Step 7

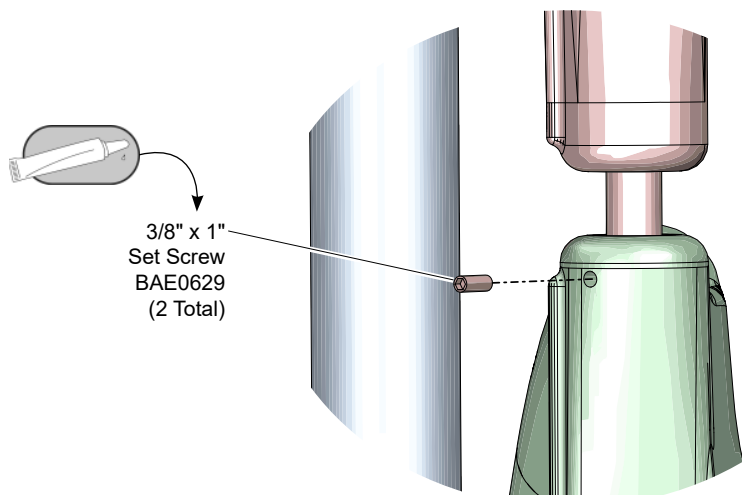
Attach the canopy top rail to the support posts.



Installation Instructions

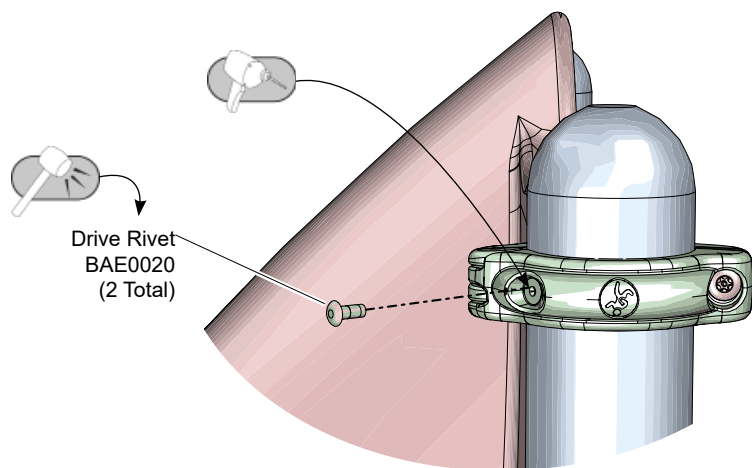
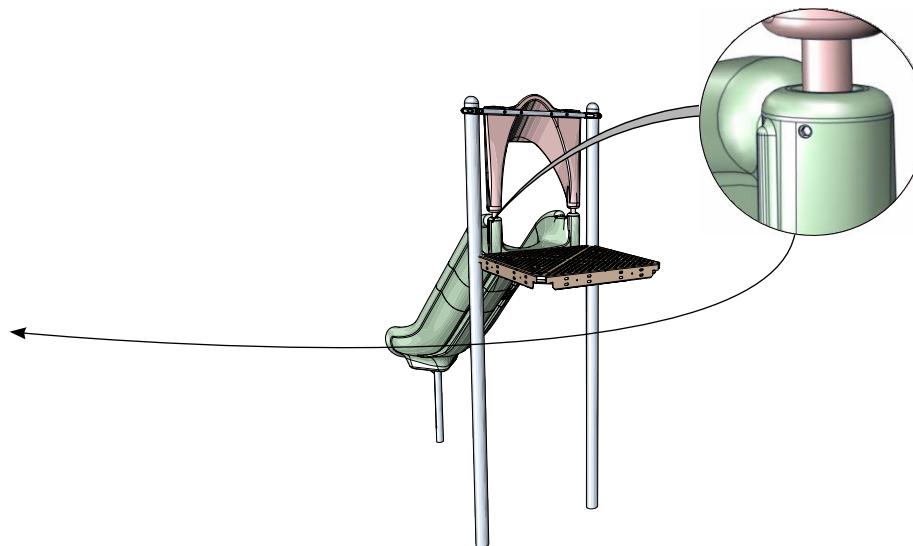


Installation Instructions



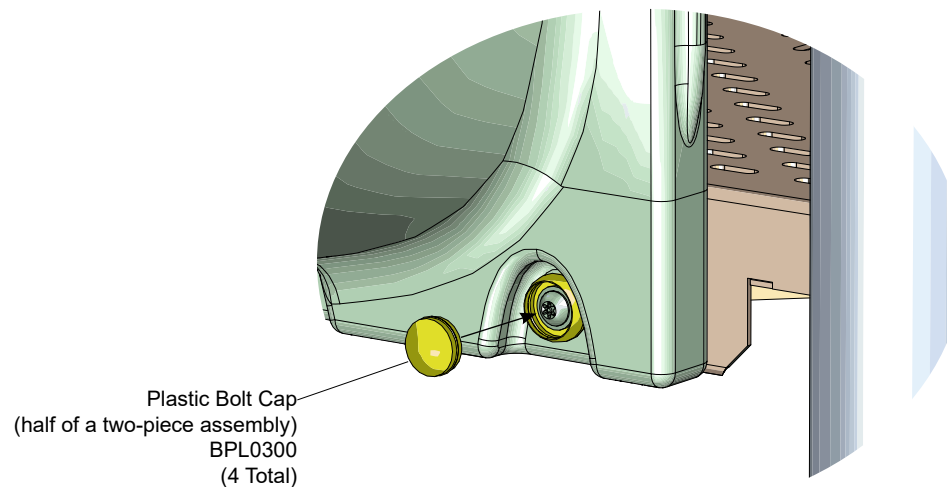
Detail F
Step 9

Attach the slide canopy to the glide slide.



Detail G
Step 11

Attach the slide canopy to the glide slide.



Detail H
Step 12

Insert the plastic caps into the plastic washers.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete. Do not install bolt caps until the structure is completely assembled and properly footed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate the footing as shown in the **Component Footing Detail** in the *Guidelines* at the beginning of this instruction booklet.

Step 4: Attach the support leg to the slide. See **Detail A**. Position the mounting plate on the support leg against the bottom of the slide, apply a drop of thread locking adhesive to the bolt threads and attach as shown. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 5: Attach the slide to the deck. See **Details B-1 and B-2**. Position the top of the slide against the deck and align the holes. Apply a drop of thread locking adhesive to the bolt threads and attach the slide to the upper holes in the deck from inside the deck. From the outside of the deck, attach the slide to the lower holes in the deck as shown.

Step 6: Attach the clamps to the canopy top rail. See **Detail C**. Position a clamp against each end of the canopy top rail and attach as shown. *Clamps should open in the same direction*. Fully tighten the connections according to tightening torque specifications.

Step 7: Attach the canopy top rail to the support posts. See **Detail D**. Position the canopy top rail between the support posts. Close the clamps around the posts at the height shown in the **Elevation View**, apply a drop of thread locking adhesive to the bolt threads and attach as shown.

Step 8: Attach the slide canopy to the canopy top rail. See **Detail E**. Position the canopy over the slide and insert the canopy extensions into the top of the slide with the top of the canopy against the top rail. Apply a drop of thread locking adhesive to the bolt threads and attach the canopy to the top rail as shown.

Step 9: Attach the slide canopy to the glide slide. See **Detail F**. Apply a drop of thread locking adhesive to the set screw threads and attach the canopy to the top of the slide as shown.

Final Details.

Step 10: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure. Adjust the exit height of the slide so it will not hold water. See **Elevation View**.

36" - 48" Slides: The slide height can be adjusted to avoid retaining water but can be no greater than 11 in. (279 mm) from the protective surfacing.

60" - 72" Slides: The slide height can be adjusted to avoid retaining water but can be no less than 7 in. (178 mm) and no greater than 15 in. (381 mm) from the protective surfacing.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

Step 11: Install drive rivets. See **Detail G**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 12: Select plastic bolt caps and press into the plastic washers. See **Detail H**. The bolt caps install more easily when they are warm.

Step 13: Apply the hood string entanglement warning label to the slide.

CH2658 - 60 in. (1524 mm) GLIDE SLIDE

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AFM1227	FAB. METAL - 1.315" O.D. x 30.50"	1
APT5491	POST - 28.94" x 13.92" x 10.23"	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0629	SCREW - 3/8"-16 x 1" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	4
BPL0300	CAP - 3/8" BOLT	4
BPL2030	CANOPY - SINGLE GLIDE SLIDE	1
BPL2032	SLIDE - 60" SINGLE GLIDE	1
ALB0030	LABEL-HOOD STRING ENTNGLMNT WRNG LABEL	1

CH2696 - 72 in. (1829 mm) GLIDE SLIDE

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AFM1227	FAB. METAL - 1.315" O.D. x 30.50"	1
APT5491	POST - 28.94" x 13.92" x 10.23"	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0629	SCREW - 3/8"-16 x 1" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	4
BPL0300	CAP - 3/8" BOLT	4
BPL2030	CANOPY - SINGLE GLIDE SLIDE	1
BPL2033	SLIDE - 72" SINGLE GLIDE	1
ALB0030	LABEL-HOOD STRING ENTNGLMNT WRNG LABEL	1

CH3126 - 48 in. (1219 mm) GLIDE SLIDE

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AFM1227	FAB. METAL - 1.315" O.D. x 30.50"	1
APT5491	POST - 28.94" x 13.92" x 10.23"	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0629	SCREW - 3/8"-16 x 1" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	4
BPL0300	CAP - 3/8" BOLT	4
BPL2030	CANOPY - SINGLE GLIDE SLIDE	1
BPL2031	SLIDE - 48" SINGLE GLIDE	1
ALB0030	LABEL-HOOD STRING ENTNGLMNT WRNG LABEL	1

CH3127 - 36 in. (914 mm) GLIDE SLIDE

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AFM1227	FAB. METAL - 1.315" O.D. x 30.50"	1
APT5491	POST - 28.94" x 13.92" x 10.23"	1
BAD0085	THREAD LOCKING ADHESIVE	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0629	SCREW - 3/8"-16 x 1" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	4
BPL0300	CAP - 3/8" BOLT	4
BPL2030	CANOPY - SINGLE GLIDE SLIDE	1
BPL2035	SLIDE - 36" SINGLE GLIDE	1
ALB0030	LABEL-HOOD STRING ENTNGLMNT WRNG LABEL	1





Assembly View

Installation Instructions


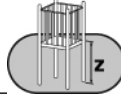

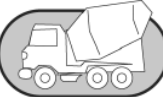
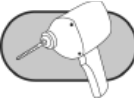


Challengers® Model CH4095

Centerline Pipe Wall Barrier

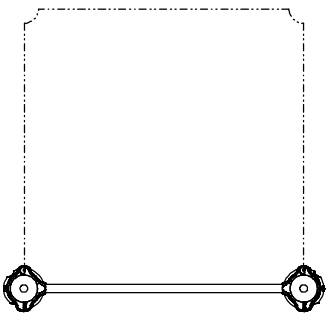
Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 installation-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

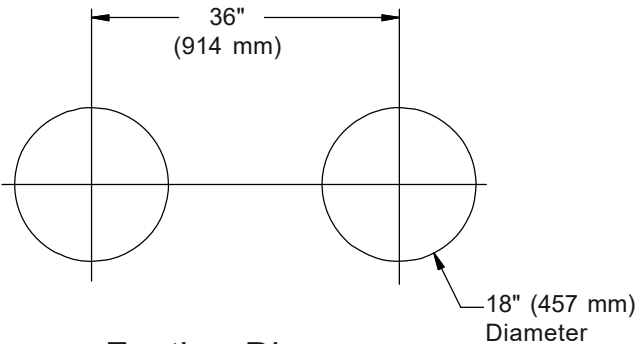
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

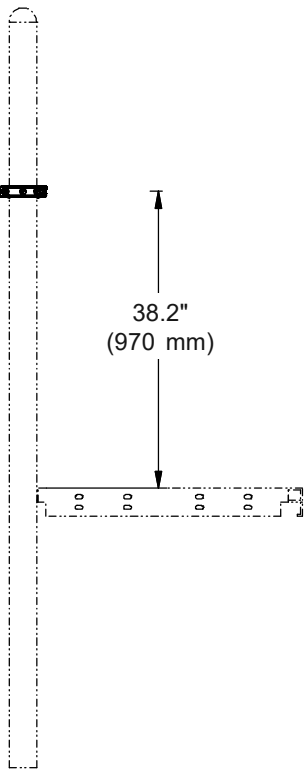
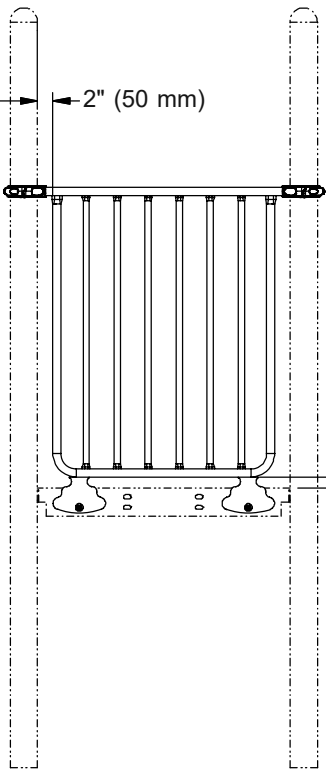
Installation Instructions



Top View



Footing Diagram

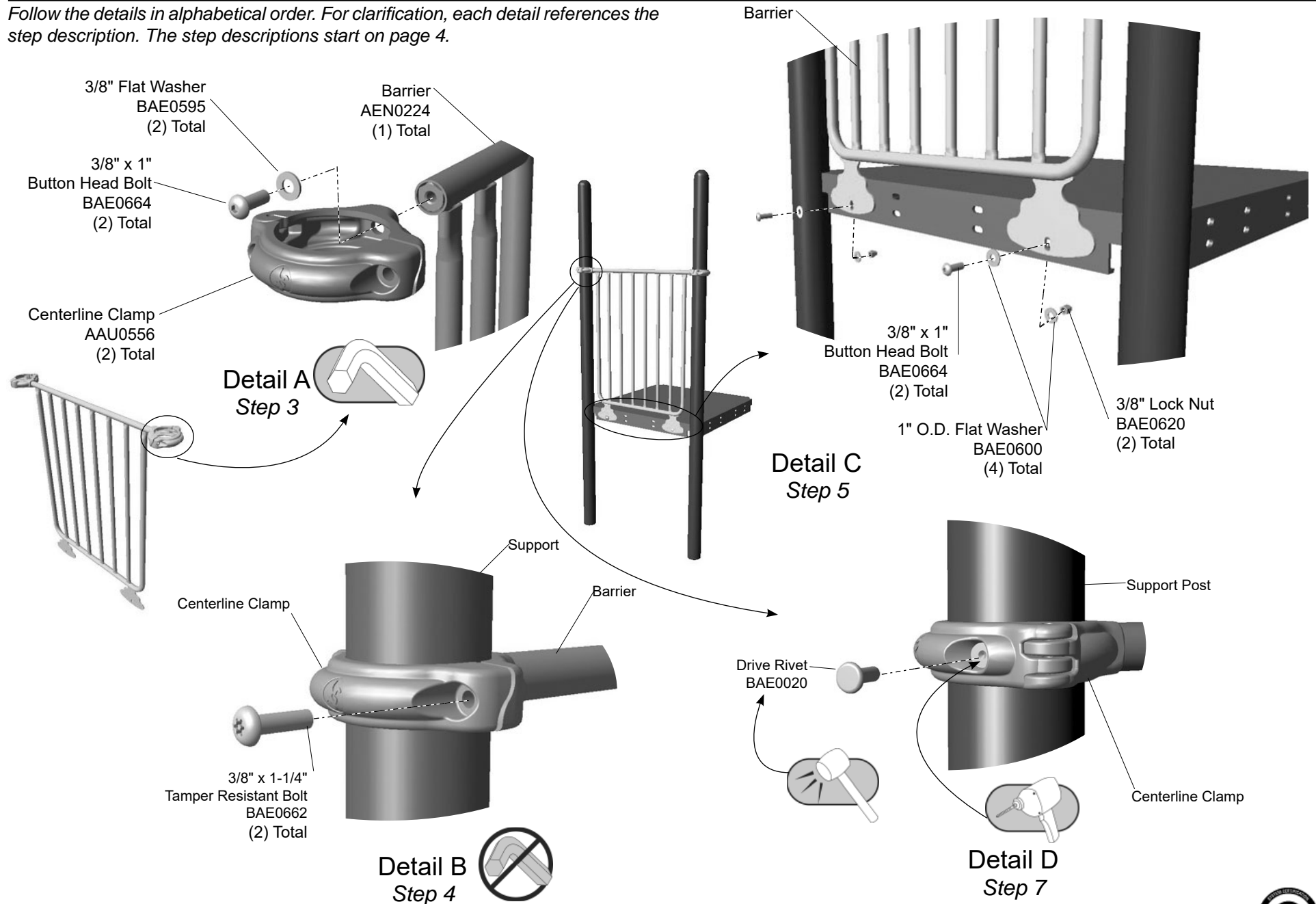


Elevation View



Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Attach the clamps to the barrier.

Step 3: See **Detail A**. Attach as shown. Make sure the clamps open the same direction.

Attach the clamps to the support posts.

Step 4: See **Detail B**. Lift the barrier into position against the deck. Close the clamps around the support posts. Align the barrier plates with the deck. Attach as shown. Snug tighten connection only. The location of the clamp may need to be changed to align deck connection holes or resolve clamp position conflicts.

Note: To avoid clamp interference, the deck has been provided with an upper and lower set of holes. Choose the either set of holes that works best with your clamp placement condition.

Attach the bottom of the barrier to the deck.

Step 5: See **Detail C**. Attach as shown.

Final Details.

Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 7: Install drive rivets. See **Detail D**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4095 - CENTERLINE PIPE WALL BARRIER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AEN0224	BARRIER - 30-1/2" x 41-7/8" CENTERLINE PIPEWALL	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0620	NUT - 3/8"-16 LOCK w/ NYLON CAP	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4



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Assembly View

Installation Instructions

Challengers® Model CH4537


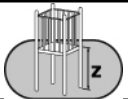


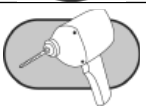

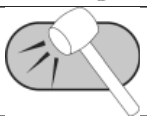
Spin Racer Panel

Deck Level

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 1 man-hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

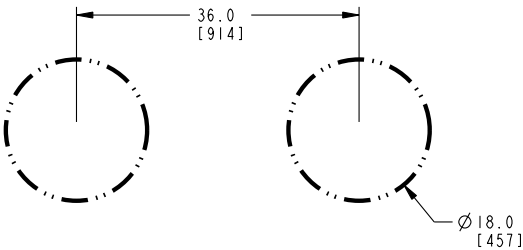
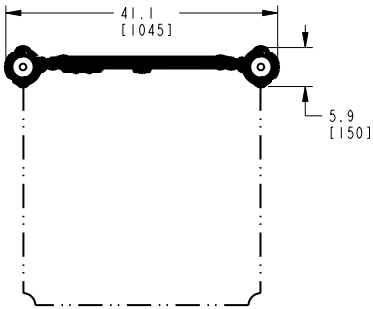
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

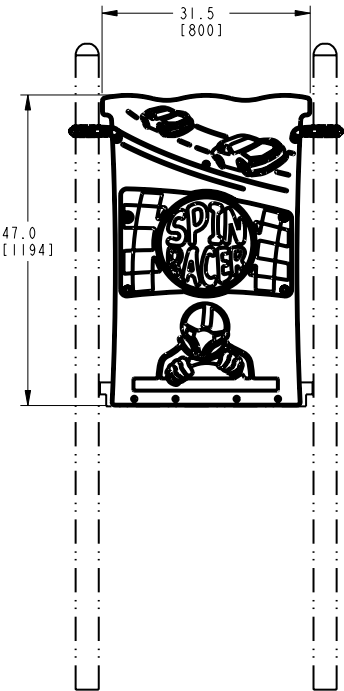
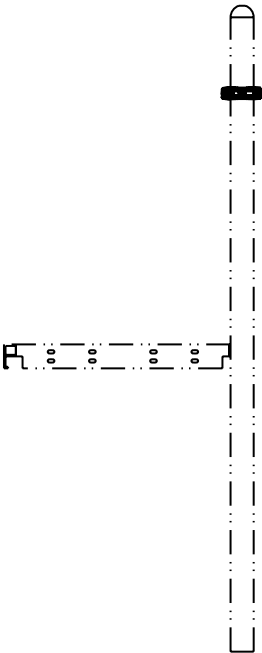
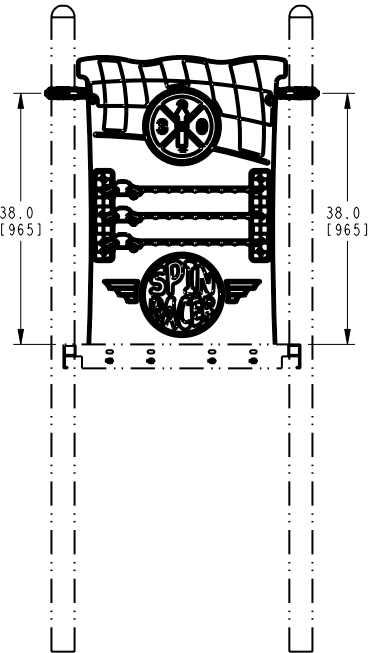
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram

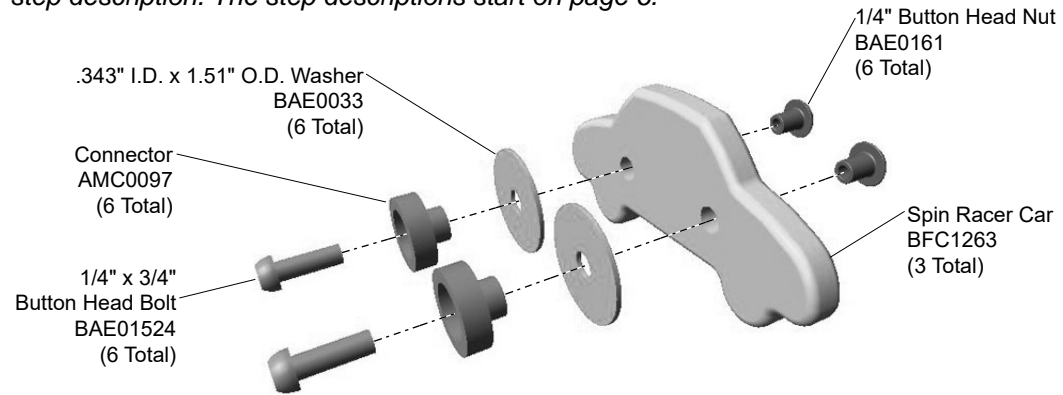


Elevation Views

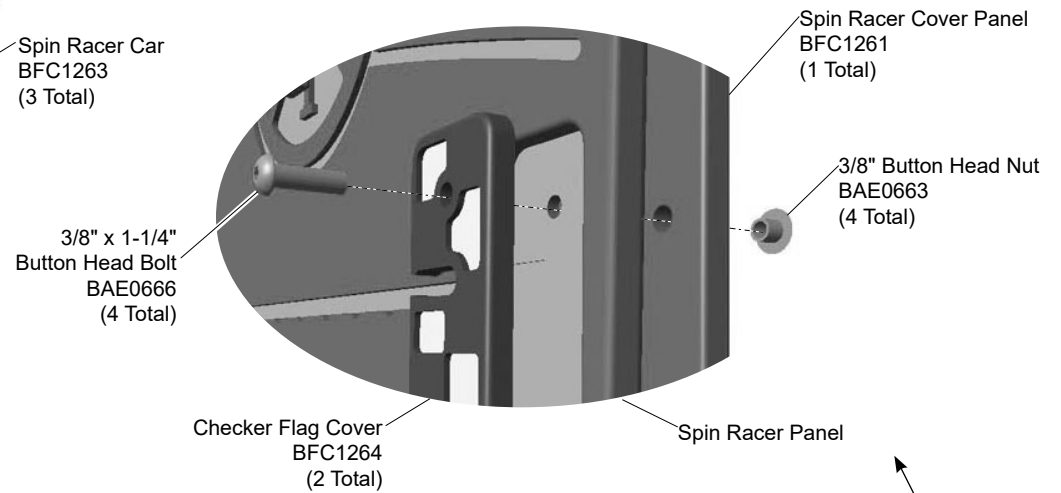


Installation Instructions

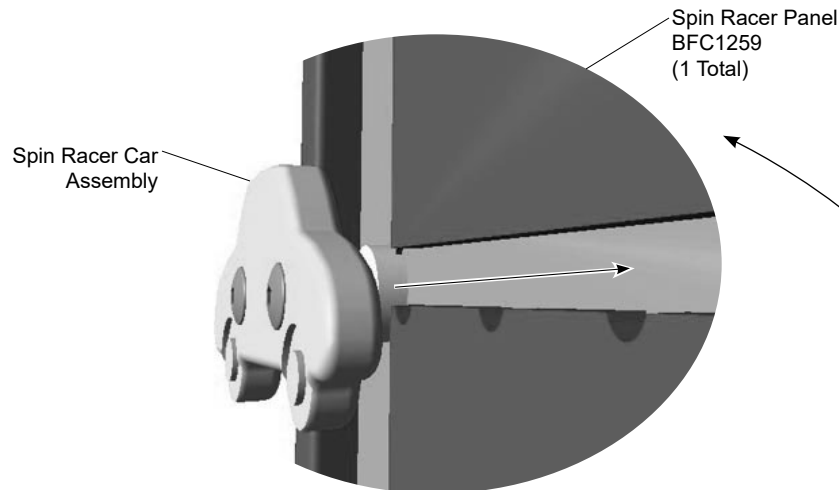
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.



Detail A
Step 3
Assemble the racer cars.



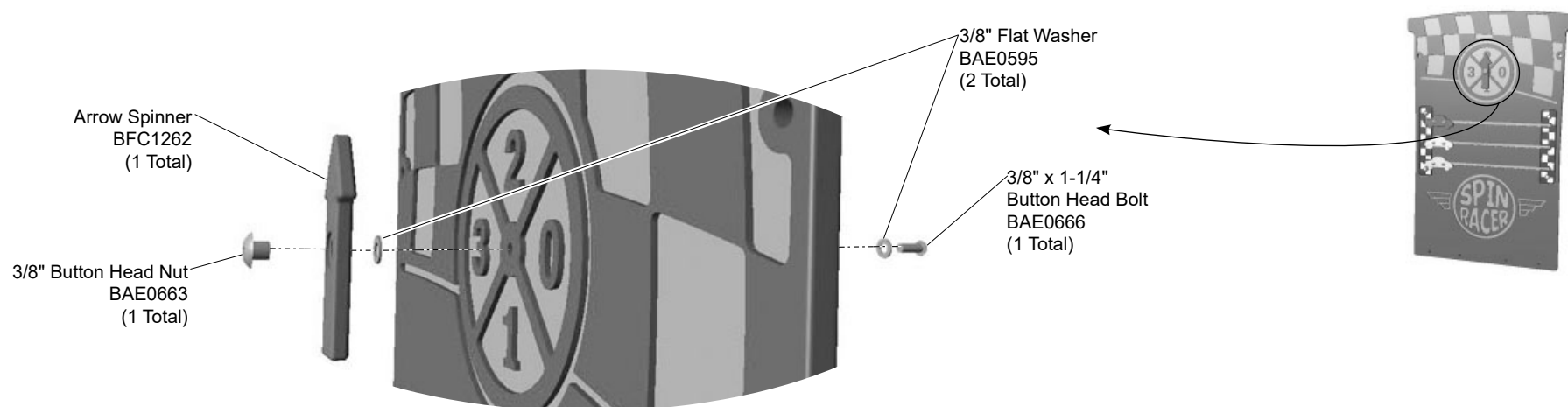
Detail C
Step 5
Attach the flag and racer cover panels to the racer panel.



Detail B
Step 4
Insert the racer cars into the panel.

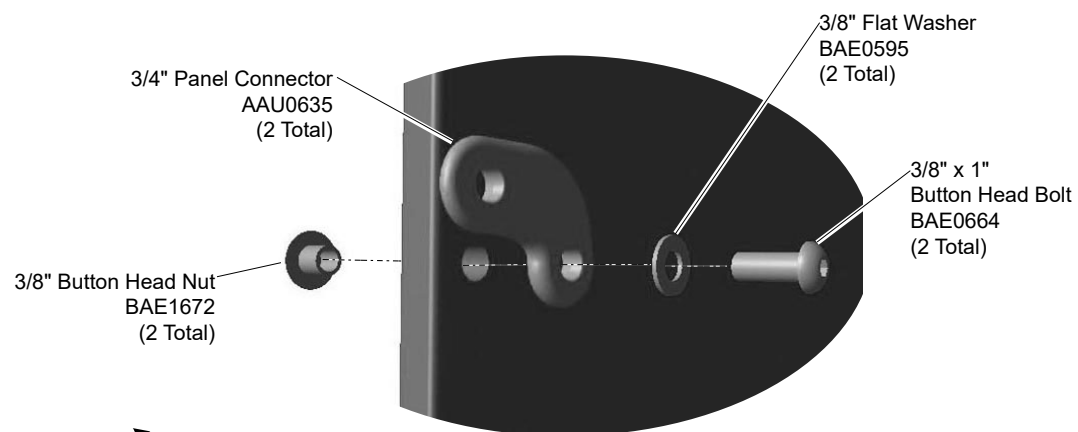
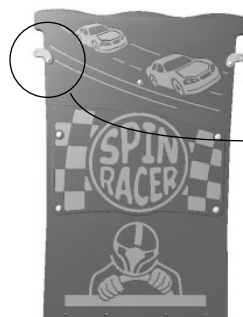


Installation Instructions



Detail D Step 6

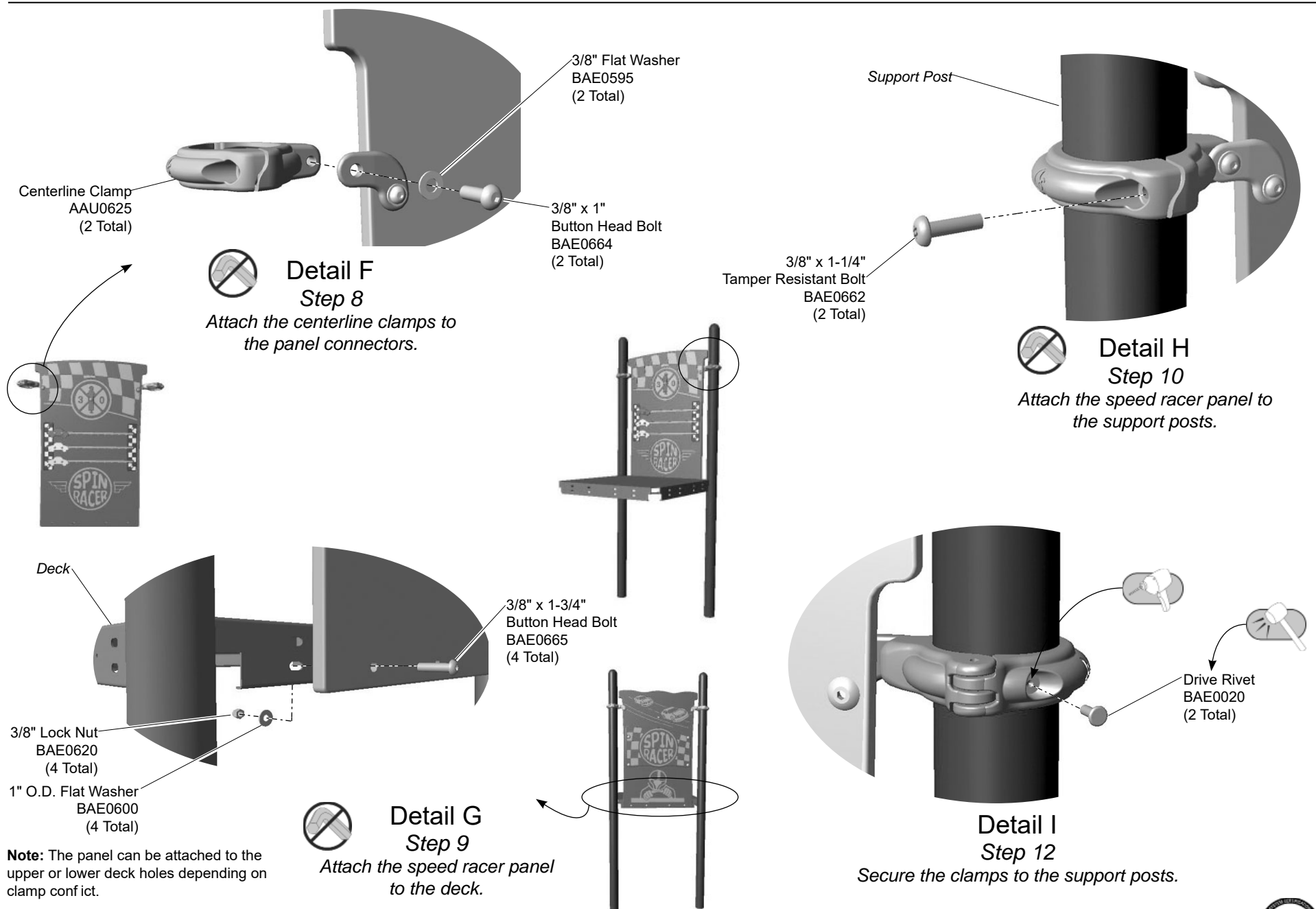
Attach the arrow spinner to the racer panel.



Detail E Step 7

Attach the panel connectors to the top backside of the racer panel.

Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Assemble the racer cars. See **Detail A**. Assemble the racer cars as shown. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Step 4: Insert the racer cars into the panel. See **Detail B**. Insert the racer cars into the tracks in the panel as shown. There is (1) one car per track.

Step 5: Attach the flag and racer cover panels to the racer panel. See **Detail C**. Insert the checker flag covers into the appropriate slots on the front of the racer panel. Position the racer cover panel against the back of the racer panel, align the holes and attach as shown. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Step 6: Attach the arrow spinner to the racer panel. See **Detail D**. Position the arrow spinner over the numeric cutout section on the front of the racer panel and attach as shown. Fully tighten the connection being careful not to over tighten the bolt.

Step 7: Attach the panel connectors to the top backside of the racer panel. See **Detail E**. Position each panel connector so that the hole in the short leg aligns with the hole in the top of the panel. Panel connectors must all attach to the side of the panel opposite the cars. Leave the connections loose for alignment adjustment. Attach as shown.

Step 8: Attach the clamps to the panel connectors. See **Detail F**. Place the flat side of each clamp against the activity side of a connector. Attach as shown.

Step 9: Attach the panel assembly to the deck. See **Detail G**. Position the panel against the deck and close the clamps around the support post and attach the panel to the lower holes in the deck as shown.

Note: The panel can be attached to the upper or lower deck holes depending on clamp conflict.

Step 10: Attach the racer panel to the support posts. See **Detail H**. Position the panel between the support posts at the height shown in the **Elevation View** and close the clamps around the support posts. Attach as shown.

Note: In the event of a clamp conflict with an adjacent component, the panel connector can be flipped upside down and reconnected to the panel. Remove the connector from both the panel and clamp before flipping and then reattach as shown in **Step 7** and **Step 8**. If possible, both the clamps should be mounted at the same height.

Final Details.

Step 11: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 12: Install drive rivets. See **Detail I**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4537 - SPIN RACER PANEL DECK LEVEL

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3-1/2" OFFSET CENTERLINE DIE CAST	2
AAU0635	CONNECT - 3/4" PANEL	2
AMC0097	CONNECTOR - 1 DIA x .57 w/HOLE	6
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0033	WASHER - .343" I.D. x 1.500" O.D.	6
BAE01524	BOLT - 1/4"-20 x 3/4" BUTTON HEAD - SS	6
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	6
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	5
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	5
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	2
BFC1259	SHEET - 31.50" x 47.57" SPIN RACER PANEL	1
BFC1261	SHEET - 16.35" x 26.00" SPIN RACER COVER	1
BFC1262	SHEET - ARROW SPINNER	1
BFC1263	SHEET - SPIN RACER CAR	3
BFC1264	SHEET - CHECKER FLAG COVER	2



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Assembly View



*Frog Button
(example of one
of ten buttons)*

Installation Instructions

Challengers® Model CH4546


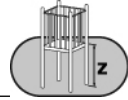

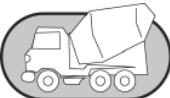


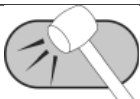
Scavenger Hunt

Deck Level

Installation Preparation

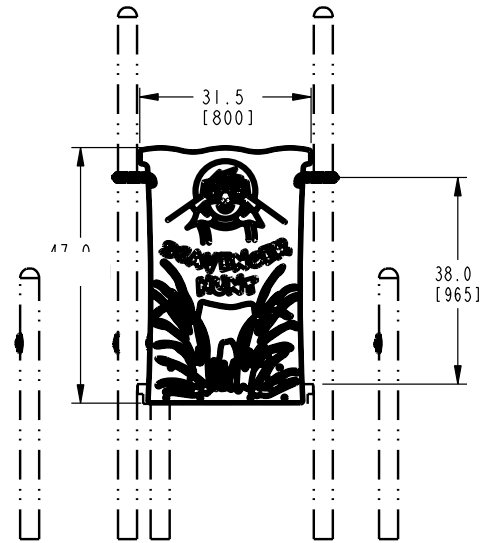
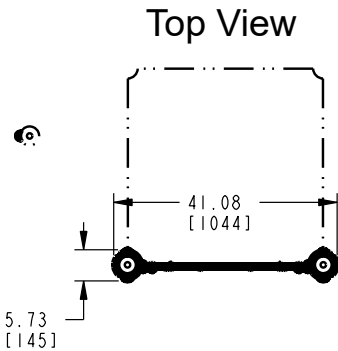
Recommended Crew: Two (2) adults
 Installation Time: 2 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

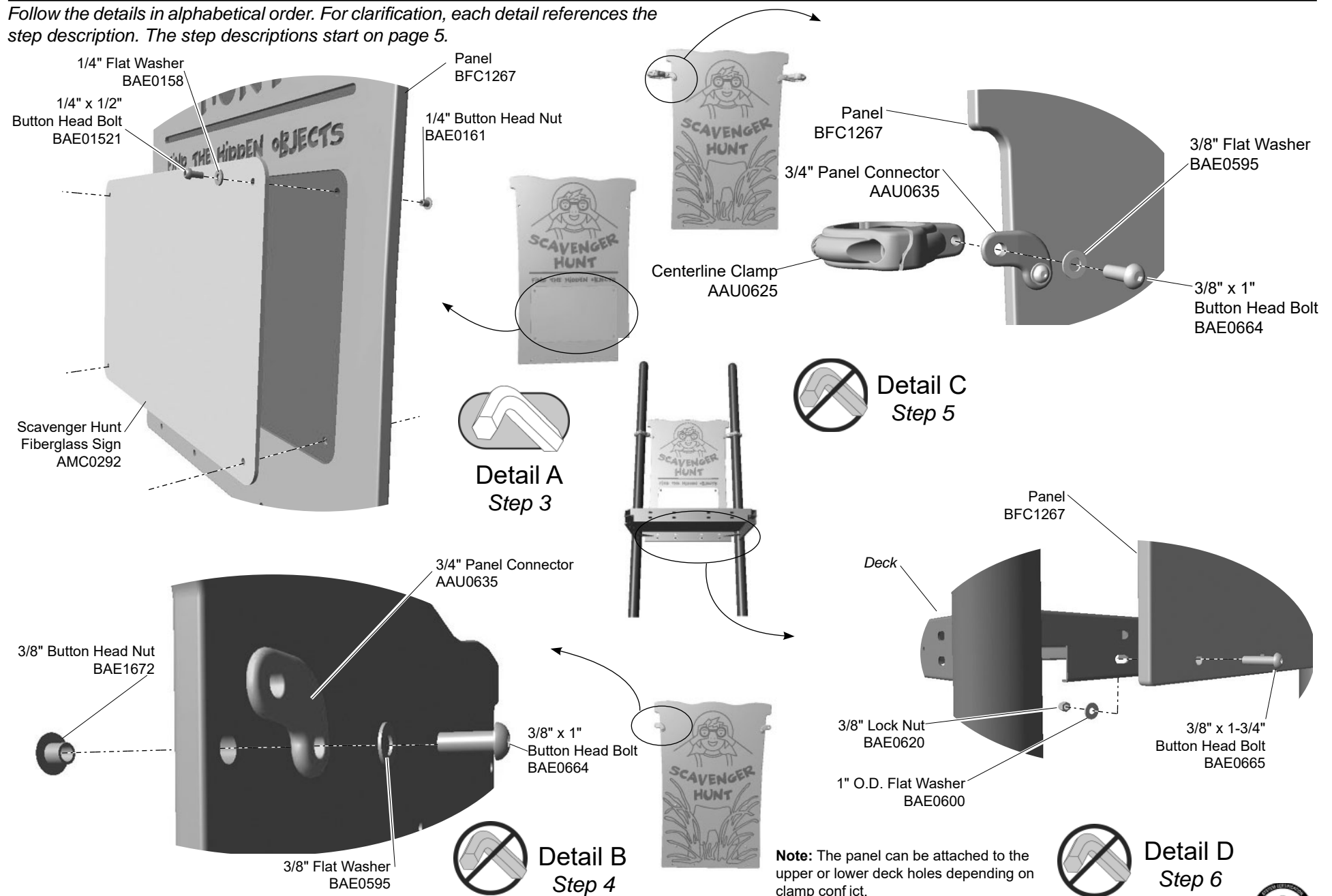


Locate buttons on support posts as various heights and locations around the playground.

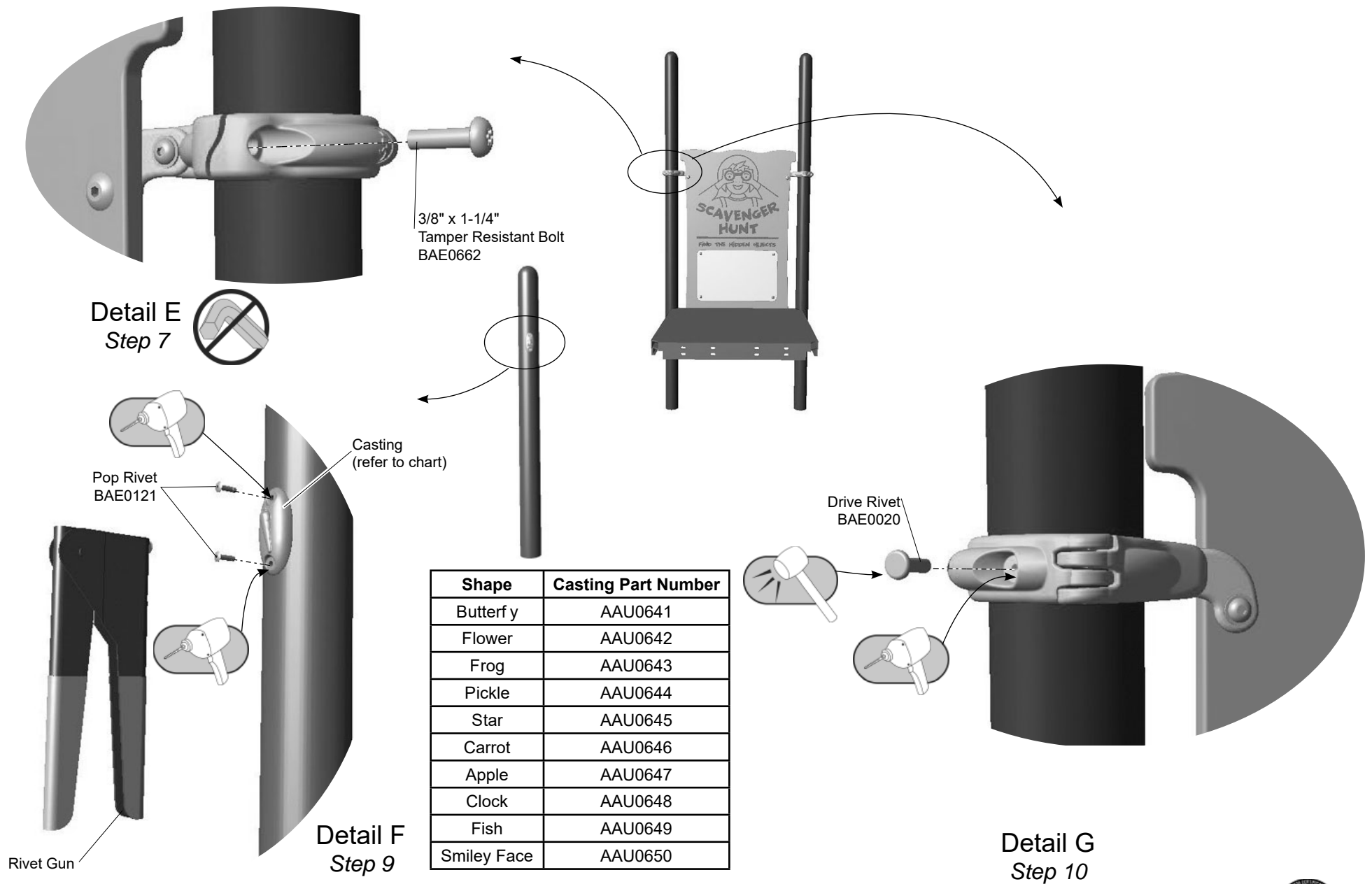
Elevation Views

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Attach the fiberglass sign to the panel.

Step 3: Attach the fiberglass sign to the panel. See **Detail A**. Select the scavenger hunt panel, the fiberglass sign, and the appropriate hardware. There are (4) four connections. Position the fiberglass sign in the cutout section of the panel and attach as shown.

Attach the panel connectors to the panel.

Step 4: Attach the panel connectors to the panel. See **Detail B**. Select the panel connectors, and the appropriate hardware. There are (2) two connections. Each panel connector looks like an 'L'. Position each panel connector so that the short leg points down. The long leg should point out away from the panel. The panel connectors must all attach to the same side of the panel (this side will face in). Align the connectors with the holes and attach as shown. Leave the connections loose.

Step 5: Attach the clamps to the panel connectors. See **Detail C**. Select the clamps and the appropriate hardware. There are (2) two connections. Place the f at side of each clamp against the outside of the panel connector. Attach as shown. Leave the connections loose for alignment adjustment.

Attach the panel to the deck.

Step 6: Attach the panel to the deck. See **Detail D**. Select the appropriate hardware. There are (4) four connections. Raise the panel into place against the deck and align the holes in the panel with the lower holes in the deck. Attach as shown.

Note: The panel can be attached to the upper or lower deck holes depending on clamp conflict.

Attach the panel to the support posts.

Step 7: Attach the panel to support posts. See **Detail E** and **Elevation View**. Select the clamps and the appropriate hardware. There are (2) two connections. Move the panel into position on the outside of the posts and close the clamps. Attach as shown.

Note: In the event of a clamp conflict with an adjacent component, the panel connector can be flipped upside down and reconnected to the panel.

Important Note: The long portion of the panel connector must be level to prevent any string entanglement issues.

Final Details.

Step 8: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Attach the castings to support posts.

Step 9: Attach the castings to the support posts. See **Detail F**. Select the appropriate hardware. There are (2) two connections per casting, (20) twenty total connections. Choose various locations around the playground to locate the castings. Using the supplied 3/16" drill bit, drill a hole in the post at the appropriate location and insert a pop rivet through the casting into the post using the standard rivet gun supplied.

Step 10: Install drive rivets in the clamps. See **Detail G**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 11: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.

ZZCH4546 - SCAVENGER HUNT DECK LEVEL

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3-1/2" OFFSET CENTERLINE DIE CAST	2
AAU0635	CONNECT - 3/4" PANEL	2
AAU0641	CASTING - BUTTERFLY	1
AAU0642	CASTING - FLOWER	1
AAU0643	CASTING - FROG	1
AAU0644	CASTING - PICKLE	1
AAU0645	CASTING - STAR	1
AAU0646	CASTING - CARROT	1
AAU0647	CASTING - APPLE	1
AAU0648	CASTING - CLOCK	1
AAU0649	CASTING - FISH	1
AAU0650	CASTING - SMILEY FACE	1
AMC0292	SIGN - SCAVENGER HUNT FIBERGLASS	1
AMC0304	TOOL - 3/16" STANDARD RIVET GUN	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0121	RIVET - 3/16" x .56 ALUM POP (.251" - .375" GRIP RANGE)	20
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	4
BAE0158	WASHER - 1/4" SAE FLAT	4
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	4
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	2
BAE1668	MISC - 3/16" DRILL BIT	1
BFC1267	SHEET - 31.50" x 47.00" SCAVENGER HUNT	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



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Assembly View (representative model)

Model	Bell Diameter
ZZCH4556	7" (178 mm)
ZZCH4557	8" (203mm)
ZZCH4558	9" (229 mm)
ZZCH4559	10" (254 mm)

Installation Instructions


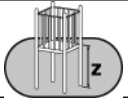

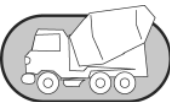
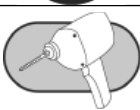

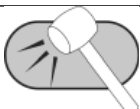
Challengers® Models CH4556, CH4557,
CH4558, and CH4559

7 in. (178 mm), 8 in. (203 mm),
9 in. (229 mm), and 10 in. (254 mm)
Bell (Post Mount)

Installation Preparation

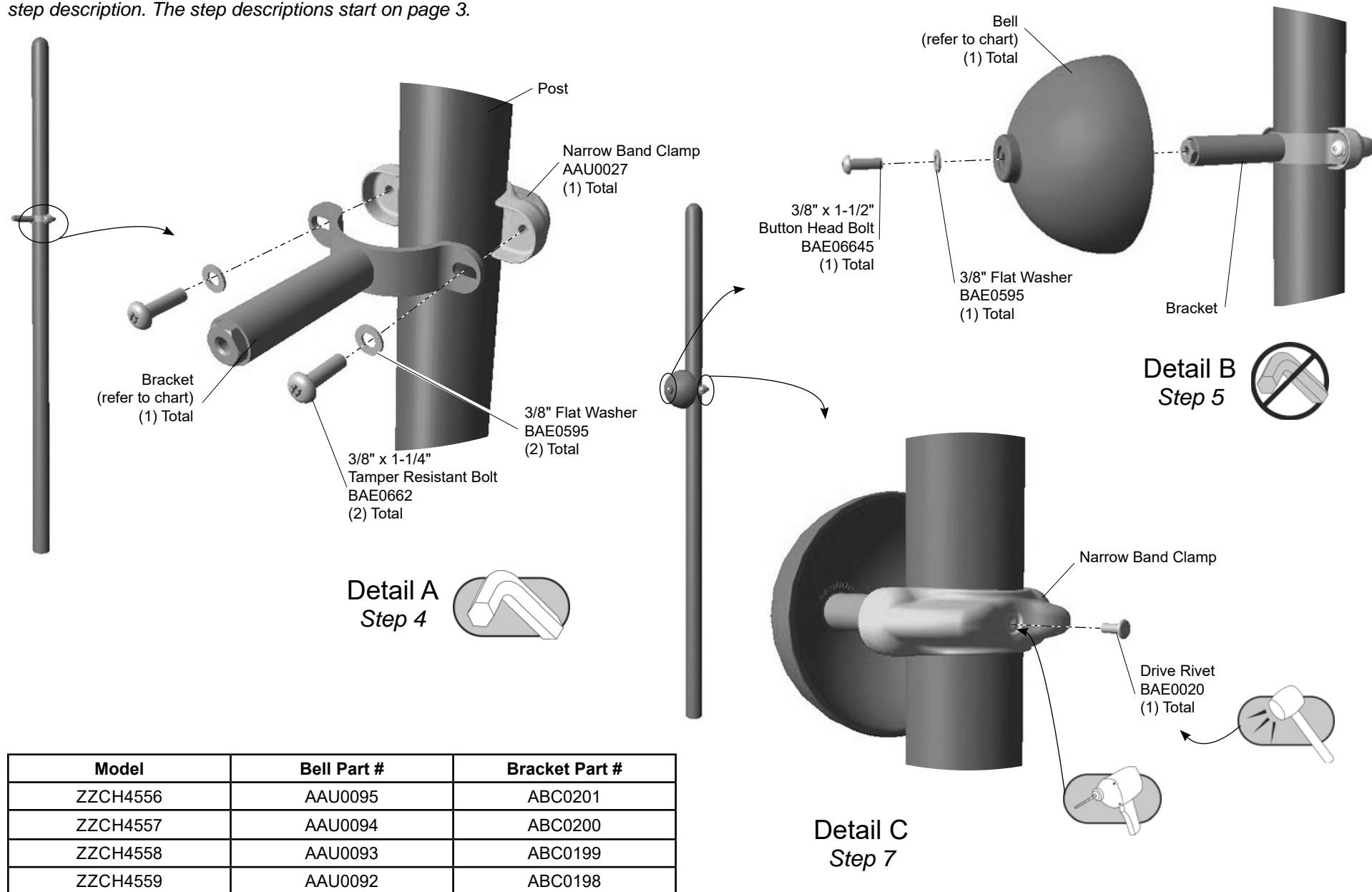
Recommended Crew: One (1) adult
Installation Time: 0.25 hour
Use Zone:..... Refer to Master Drawing
User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 3.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine location of the bell by referring to the master plan view / structure layout drawing.

Attach mounting bracket to the post.

Step 4: See **Detail A**. Position the mounting bracket against the support post at the desired height. Attach as shown Snug tighten connections.

Attach bell to the mounting bracket.

Step 5: See **Detail B**. Place the concave side of the bell over the mounting bracket and align holes. Attach as shown.

Final Details.

Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 7: Install drive rivets. See **Detail C**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4556 - 7 in. (178 mm) BELL (POST MOUNT)

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	1
AAU0095	MISC - 7.00" dia. x 3.88" BELL	1
ABC0201	BRACKET - 3-1/2" dia. x 6-3/8"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	3
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1

CH4559 - 10 in. (254 mm) BELL (POST MOUNT)

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	1
AAU0092	MISC - 10.00" DIA. x 5.38" BELL	1
ABC0198	BRACKET - 3-1/2" DIA. x 7-7/8"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	3
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1

CH4557 - 8 in. (203 mm) BELL (POST MOUNT)

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	1
AAU0094	MISC - 8.00" dia. x 4.38" BELL	1
ABC0200	BRACKET - 3-1/2" dia. x 6-7/8"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	3
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1

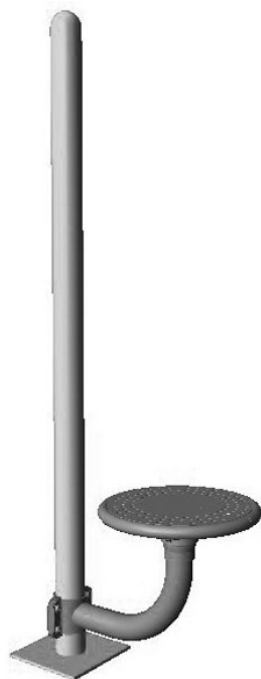
CH4558 - 9 in. (229 mm) BELL (POST MOUNT)

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	1
AAU0093	MISC - 9.00" dia. x 4.88" BELL	1
ABC0199	BRACKET - 3-1/2" dia. x 7-3/8"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	3
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESISTANT	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1



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www.playworldsystems.com



Assembly View

Installation Instructions

Challengers® Model CH4578


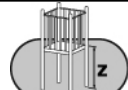




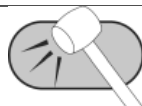
Family Furnishings - Anywhere Seat

Installation Preparation

Recommended Crew: One (2) adult

Installation Time: 0.25 hour

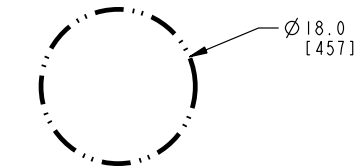
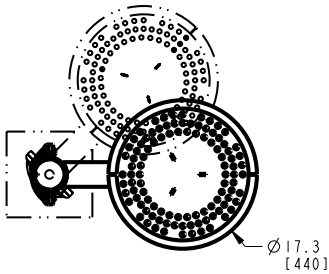
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

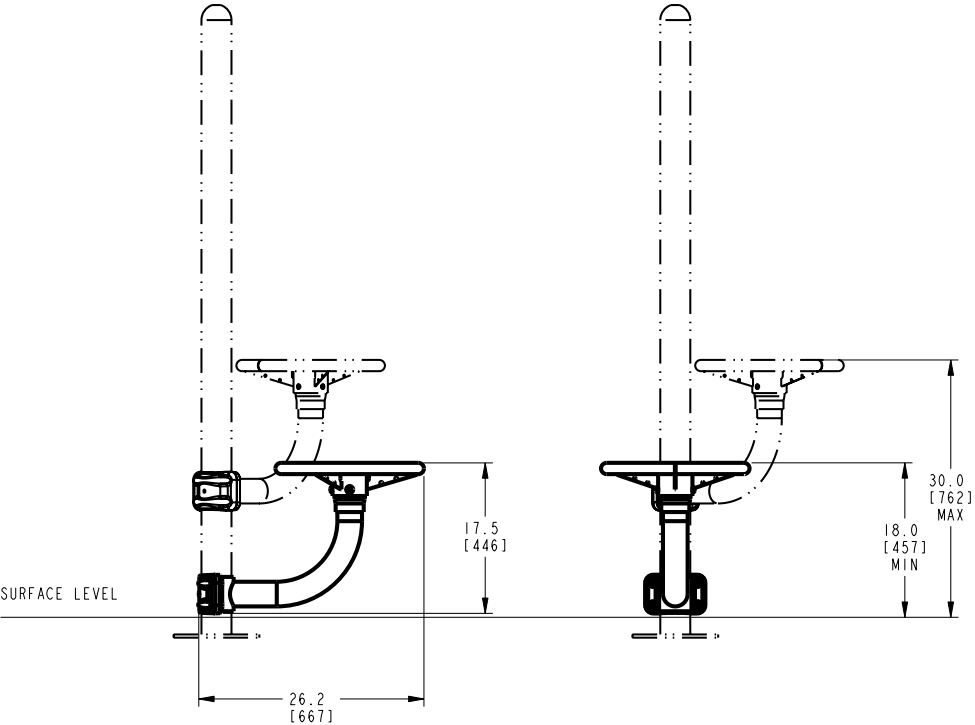
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram

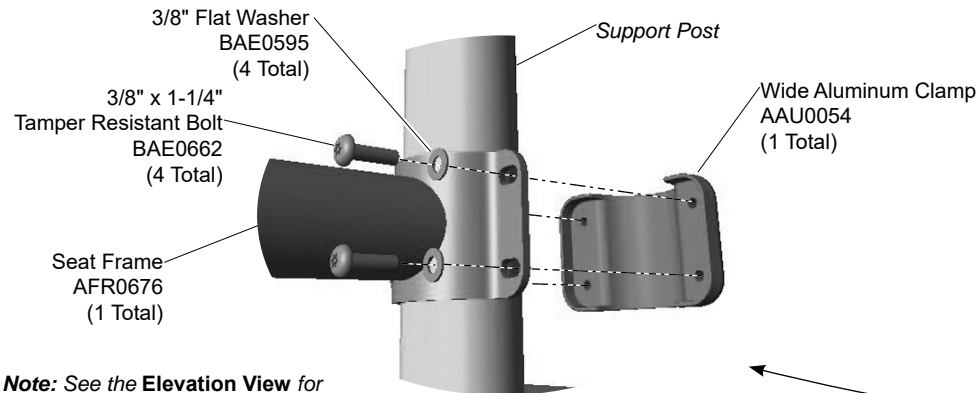


Elevation Views



Installation Instructions

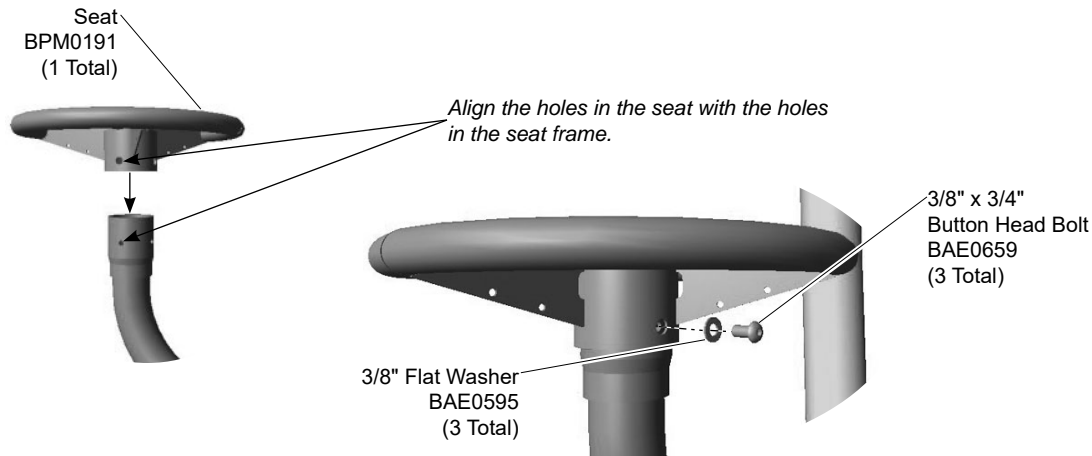
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.



Note: See the **Elevation View** for the **minimum** and **maximum** heights that the seat may be mounted.

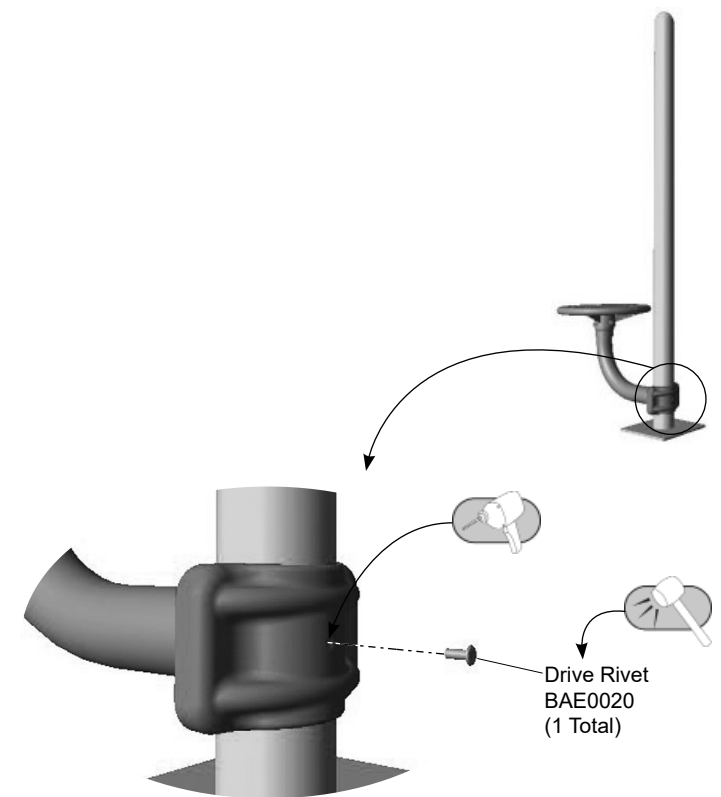
Detail A Step 3

Attach the seat frame to the support post.



Detail B Step 4

Attach the seat to the seat frame.



Detail C Step 6

Secure the clamp to the support post.

Installation Instructions

Bill of Materials

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the seat frame to the support post. See **Detail A**. Position the seat frame against the support post and attach as shown.

Note: See the **Elevation View** for the minimum and maximum heights that the seat may be mounted.

Step 4: Attach the seat to the seat frame. See **Detail B**. Place the seat on top of the seat frame, align the holes and attach as shown.

Final Details.

Step 5: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

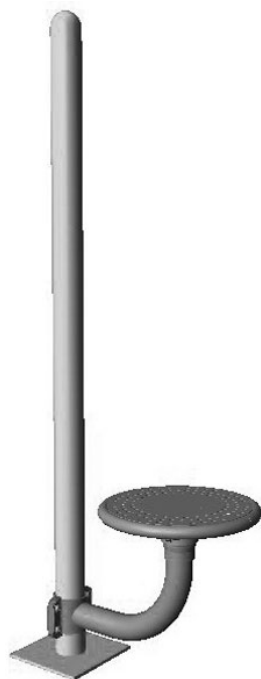
Step 6: Install drive rivets. See **Detail C**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4578 - FAMILY FURNISHINGS - ANYWHERE SEAT

PART NO.	DESCRIPTION	QTY.
AAU0054	CLAMP - 3-1/2" DIA. x 4-1/2" WIDE ALUMINUM	1
AFR0676	FRAME - 3-1/2" SINGLE POST SEAT	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	7
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	3
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	4
BPM0191	SEAT - 3.86" x 17.12" x 17.12"	1





Assembly View

Installation Instructions

Challengers® Model CH4578


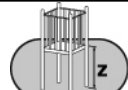

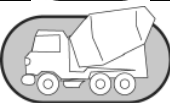
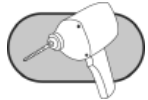


Family Furnishings - Anywhere Seat

Installation Preparation

Recommended Crew: One (2) adult

Installation Time: 0.25 hour

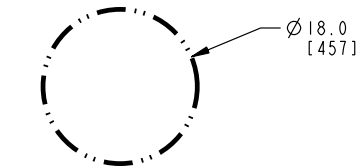
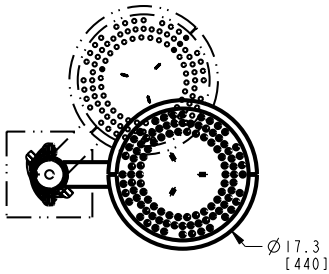
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

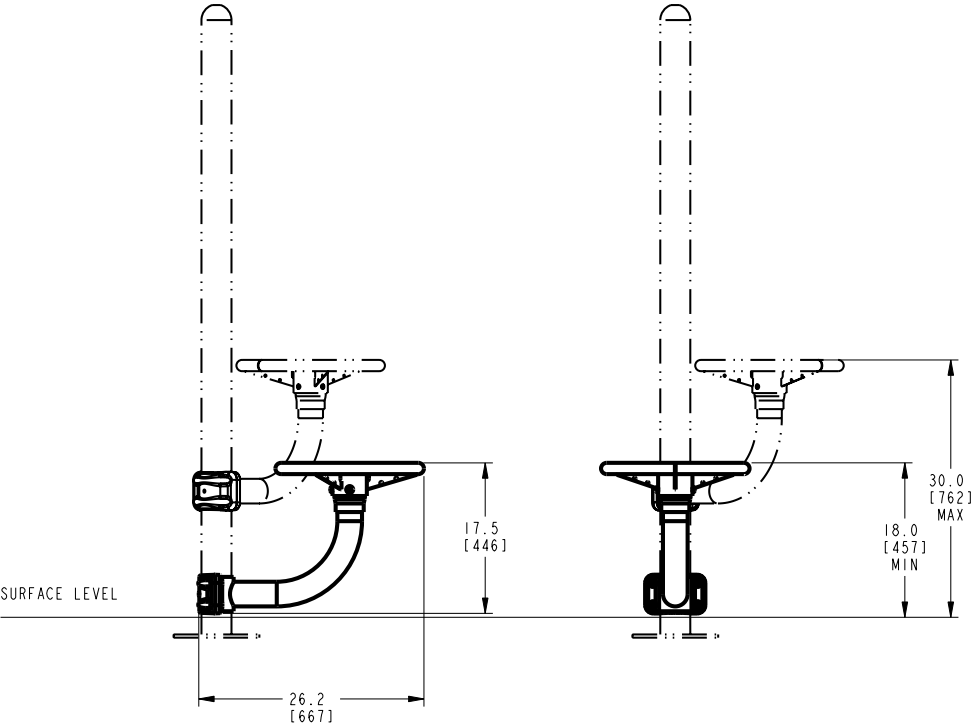
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram

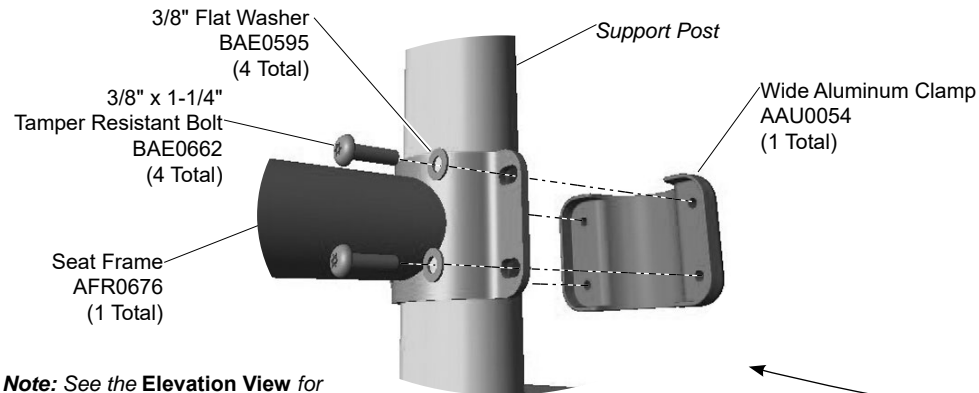


Elevation Views



Installation Instructions

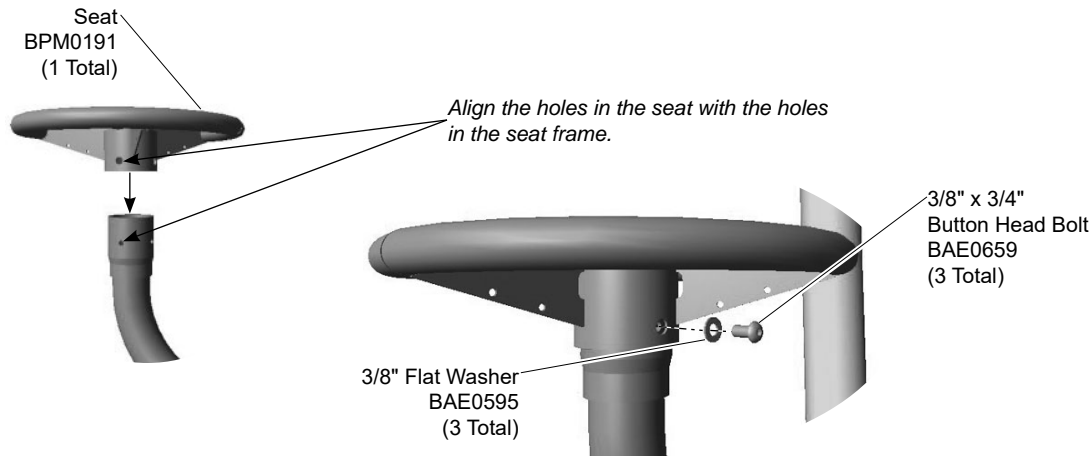
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.



Note: See the **Elevation View** for the **minimum** and **maximum** heights that the seat may be mounted.

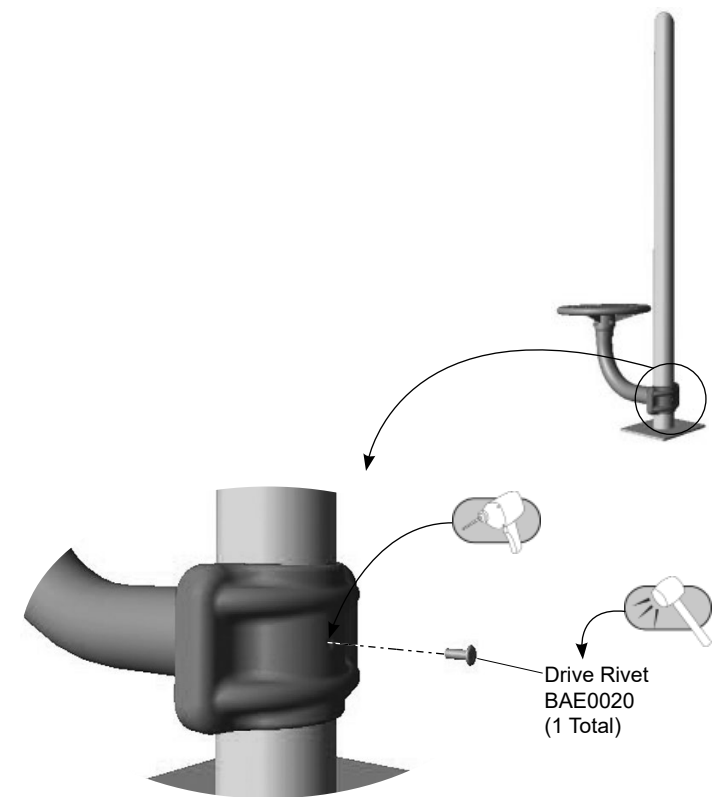
Detail A Step 3

Attach the seat frame to the support post.



Detail B Step 4

Attach the seat to the seat frame.



Detail C Step 6

Secure the clamp to the support post.

Installation Instructions

Bill of Materials

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the seat frame to the support post. See **Detail A**. Position the seat frame against the support post and attach as shown.

Note: See the **Elevation View** for the minimum and maximum heights that the seat may be mounted.

Step 4: Attach the seat to the seat frame. See **Detail B**. Place the seat on top of the seat frame, align the holes and attach as shown.

Final Details.

Step 5: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

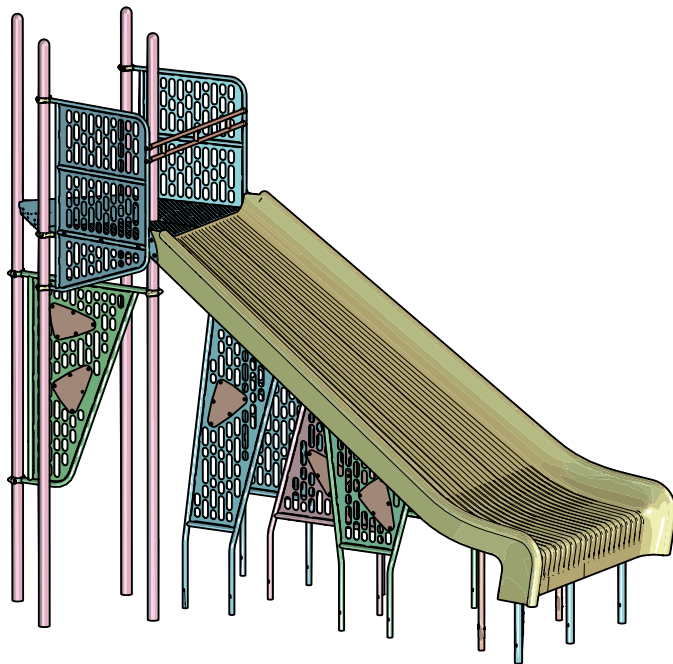
Step 6: Install drive rivets. See **Detail C**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4578 - FAMILY FURNISHINGS - ANYWHERE SEAT

PART NO.	DESCRIPTION	QTY.
AAU0054	CLAMP - 3-1/2" DIA. x 4-1/2" WIDE ALUMINUM	1
AFR0676	FRAME - 3-1/2" SINGLE POST SEAT	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	1
BAE0595	WASHER - 3/8" SAE FLAT	7
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	3
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	4
BPM0191	SEAT - 3.86" x 17.12" x 17.12"	1





Assembly View (representative model)

Installation Instructions

Challengers® Models CH4695 and CH4695S

Mighty Descent w/ Prism Pass

In-Ground and Surface Mount




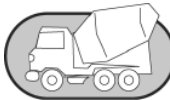



Installation Preparation

Recommended Crew: Three (3) adults
 *minimum of six (6) adults required for
 placement of slide

Installation Time (In-Ground): 10 man-hours
 Installation Time (Surface Mount): 5 man-hours

Concrete Required: 0.48 cubic yard (0,32 cubic meters)
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

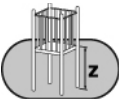
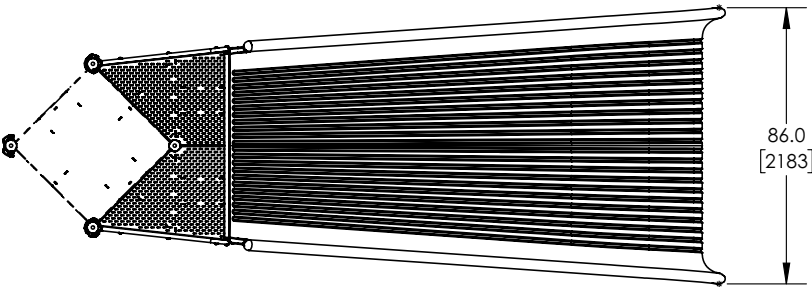
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

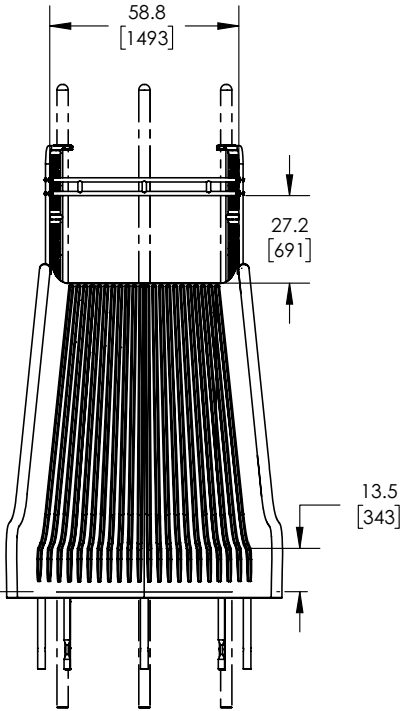
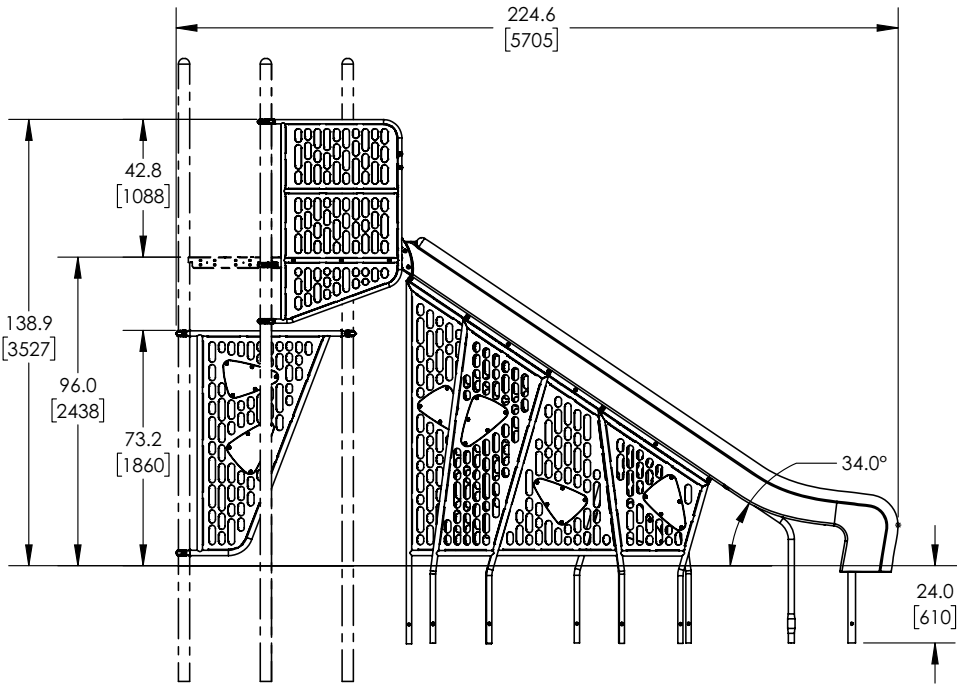
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



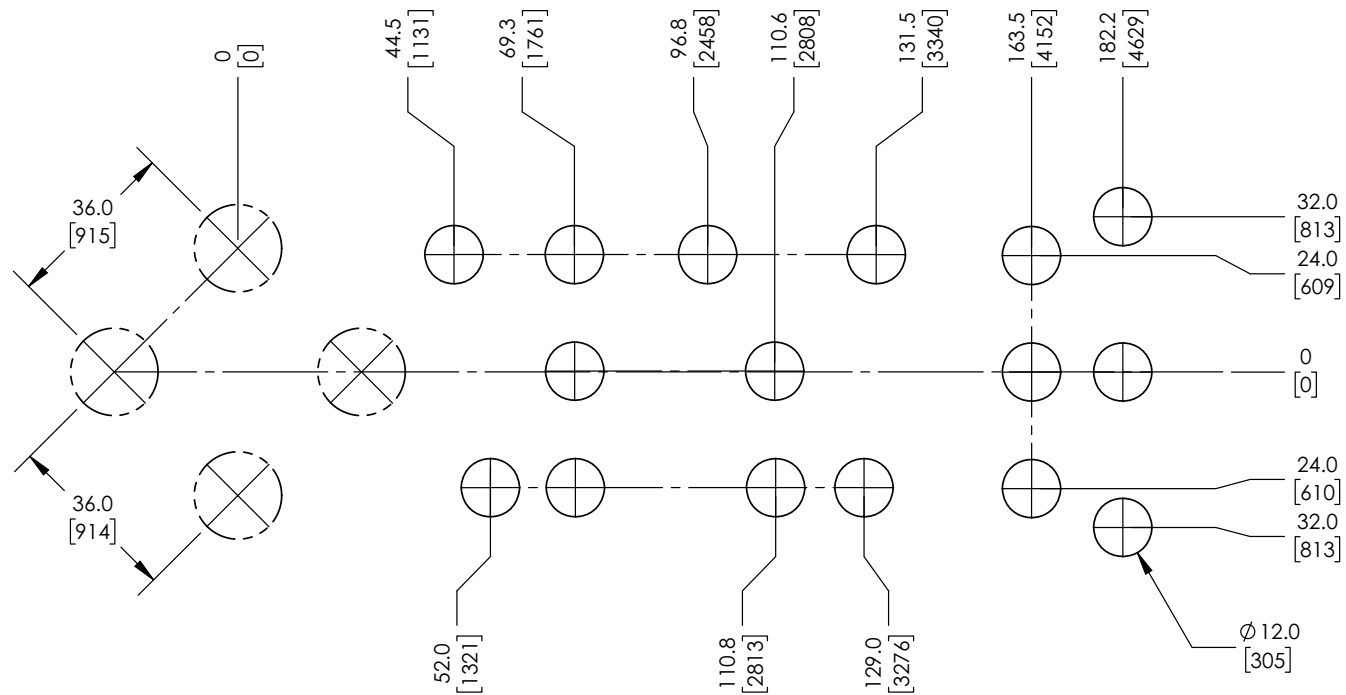
Height of the deck



Elevation Views
CH4695



Installation Instructions

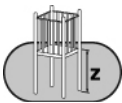
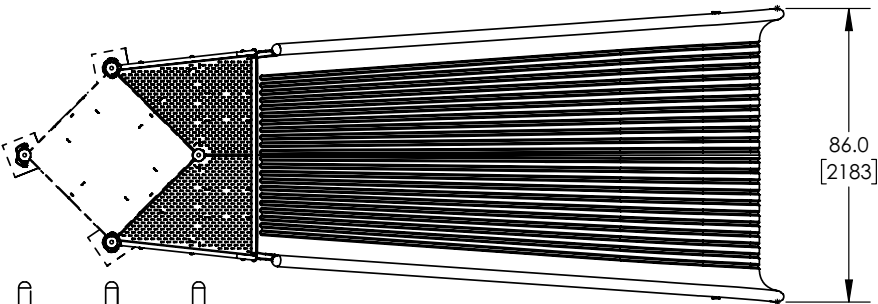


Footing Diagram
CH4695

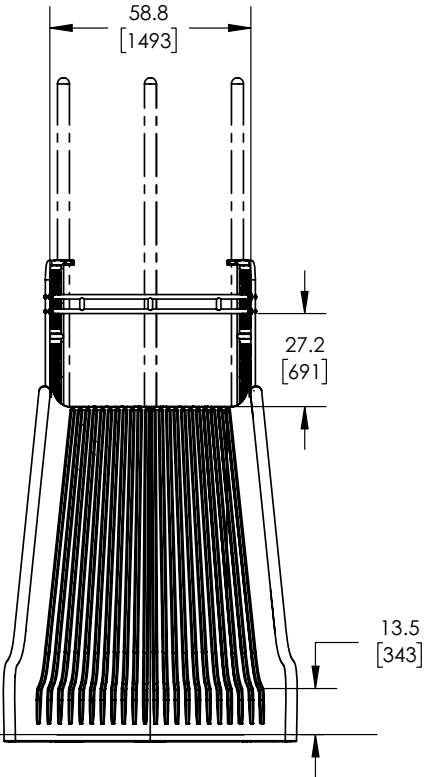
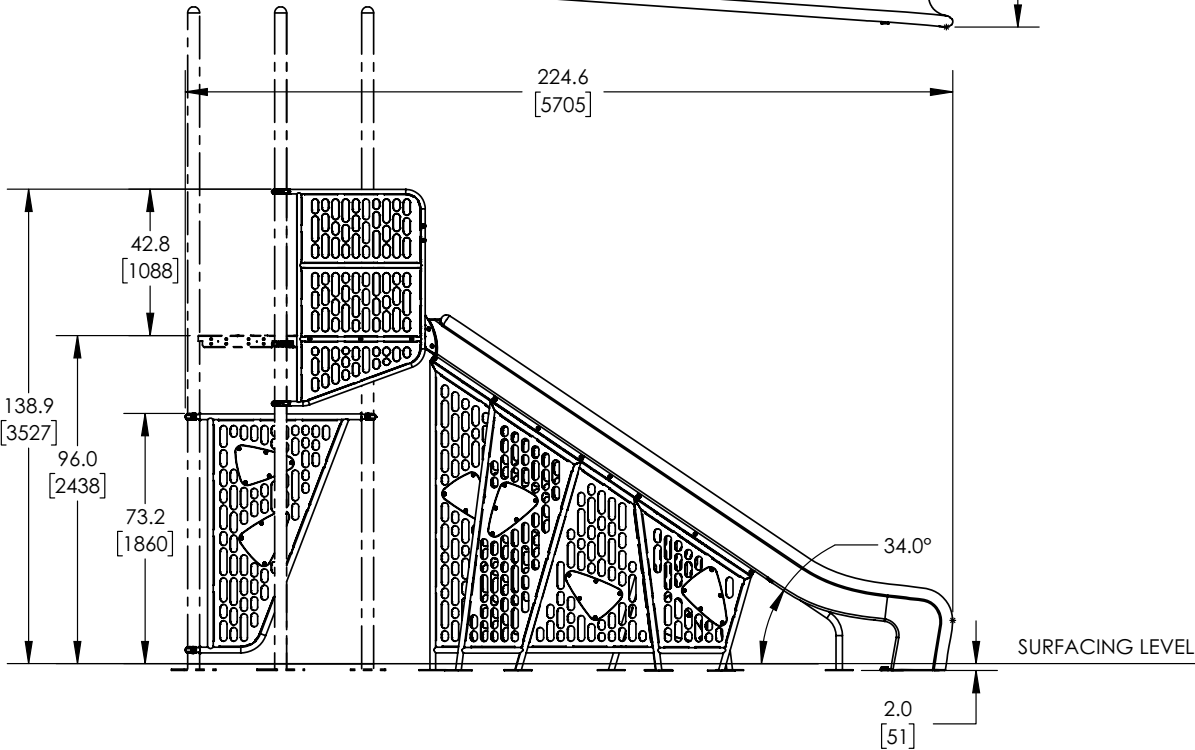
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



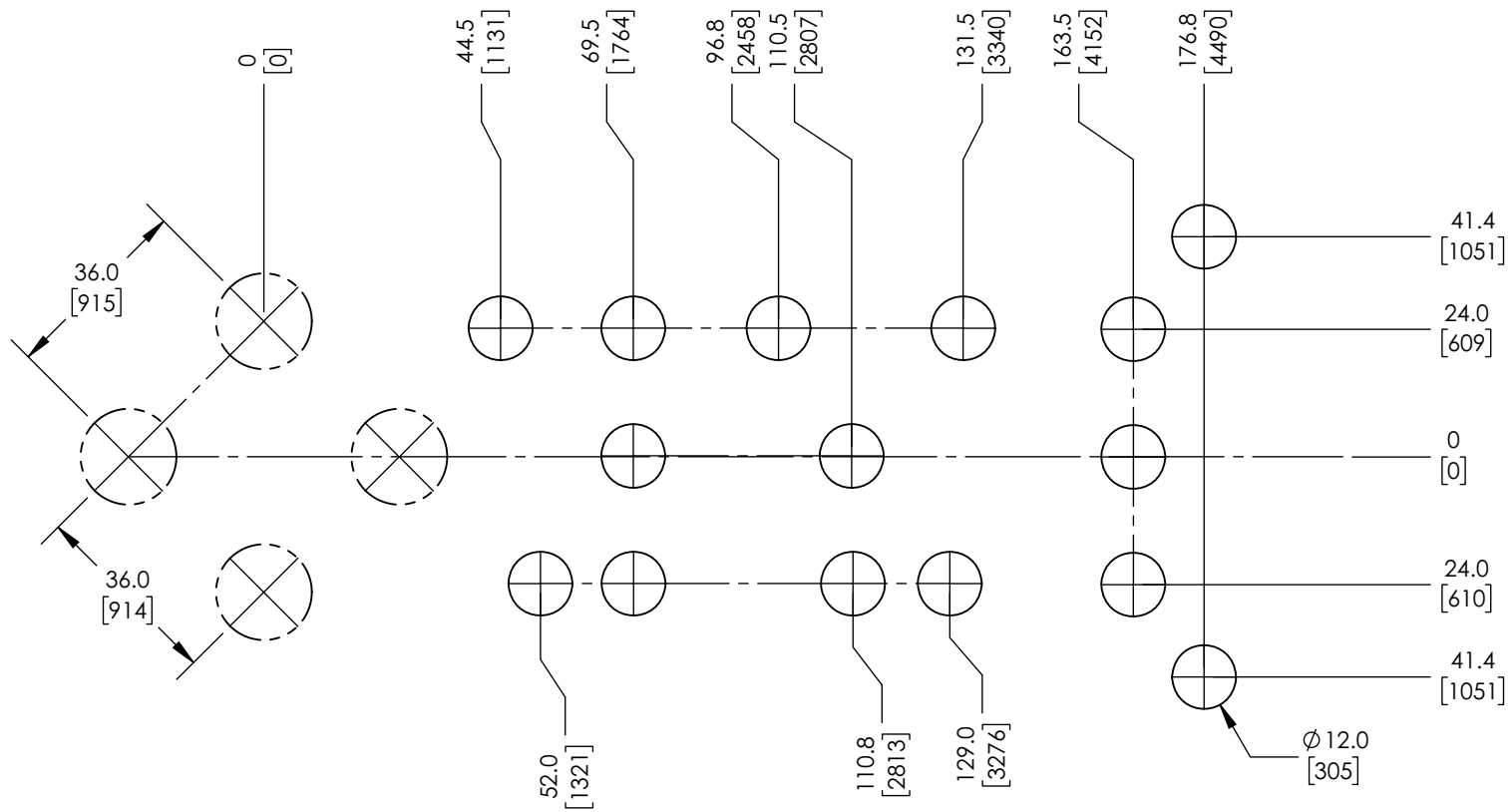
Height of the deck



Elevation Views
CH4695S

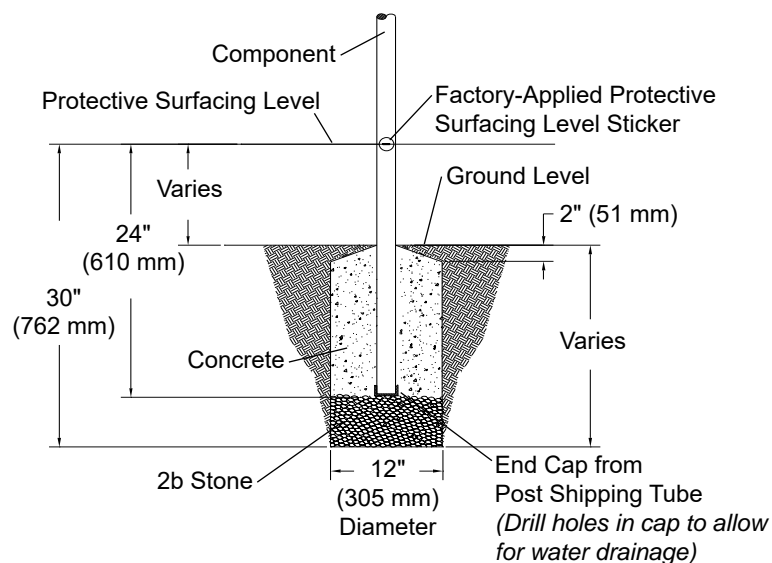


Installation Instructions



Footing Diagram
CH4695S

Installation Instructions



Component Footing Detail (ASTM/CSA)

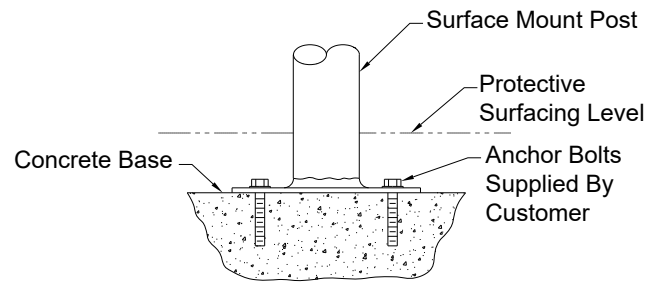
FOOTING NOTES

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

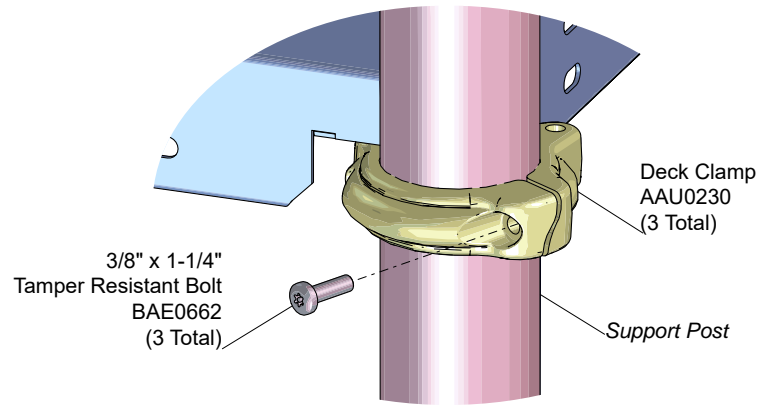
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

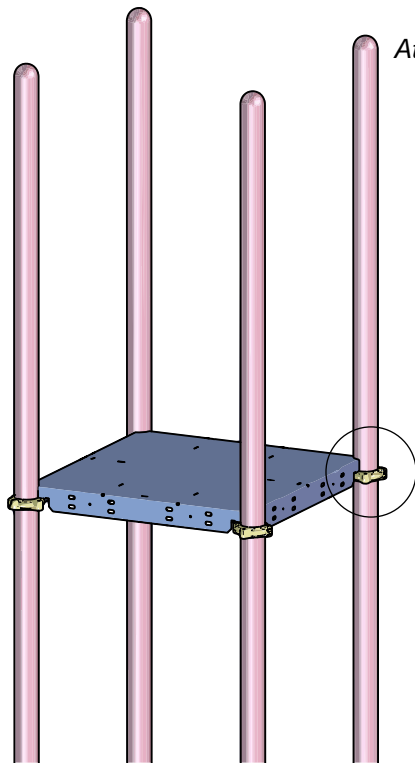
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 21.



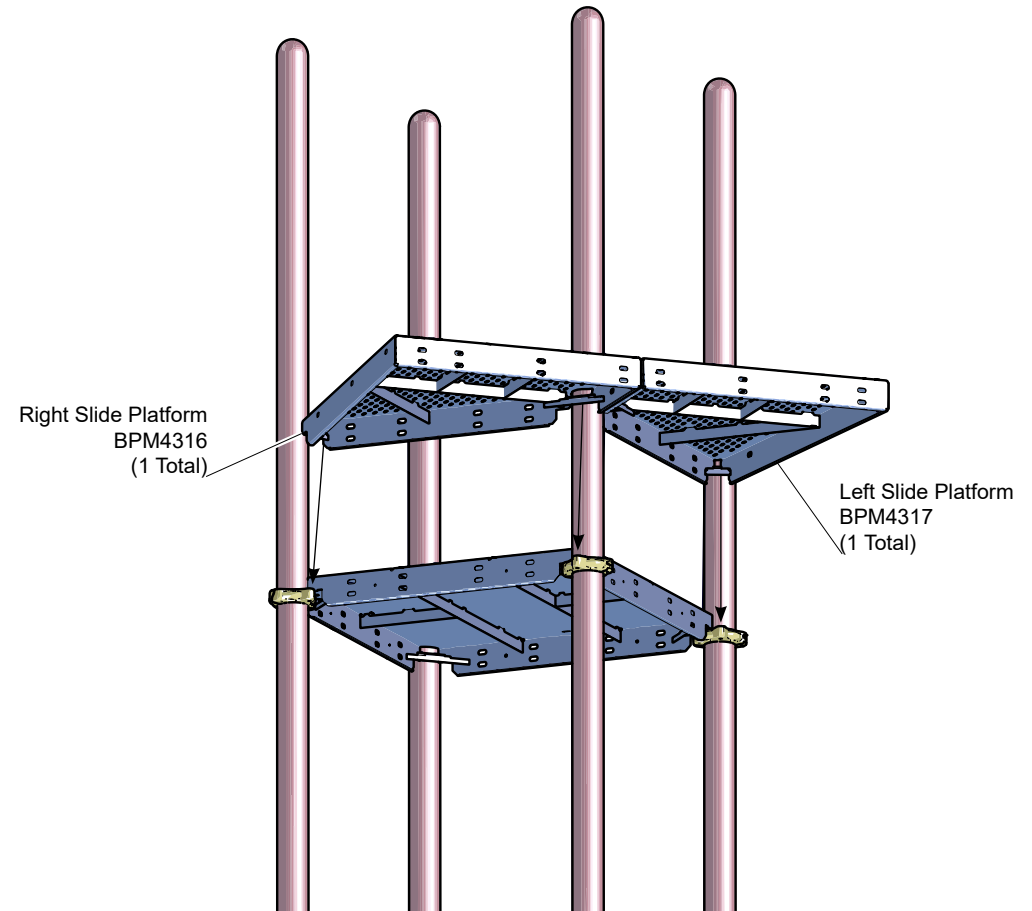
Detail A Step 4



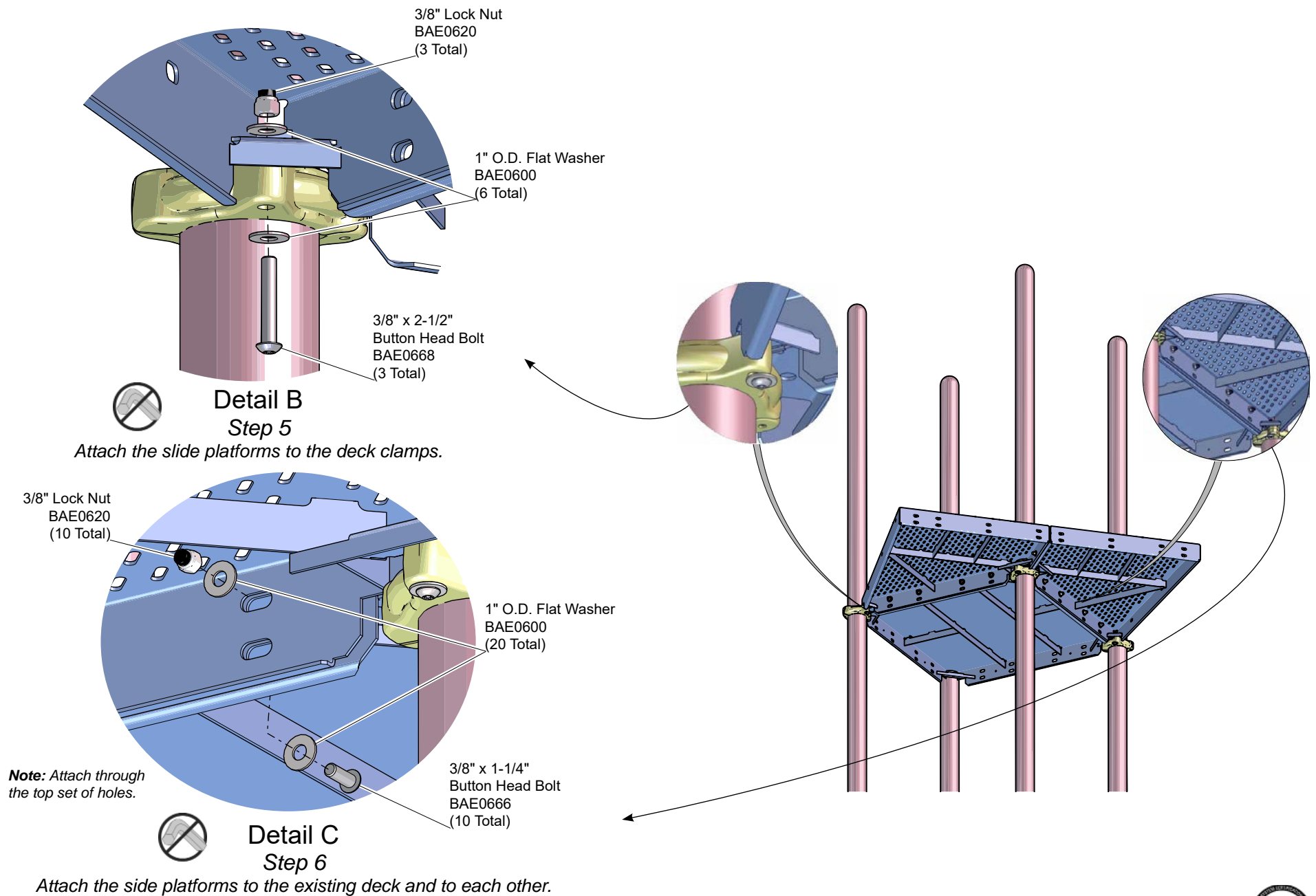
Attach the deck clamps to the existing support posts.



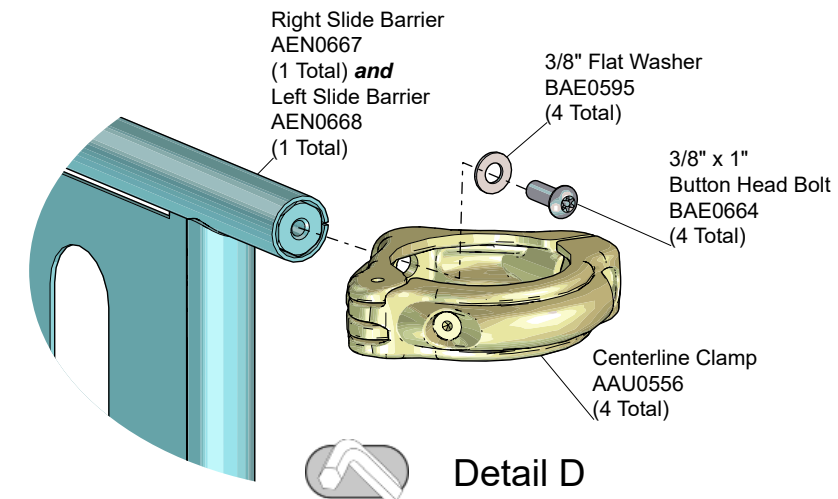
Note: One deck clamp per support post, refer to the Master Layout Drawing for placement.



Installation Instructions

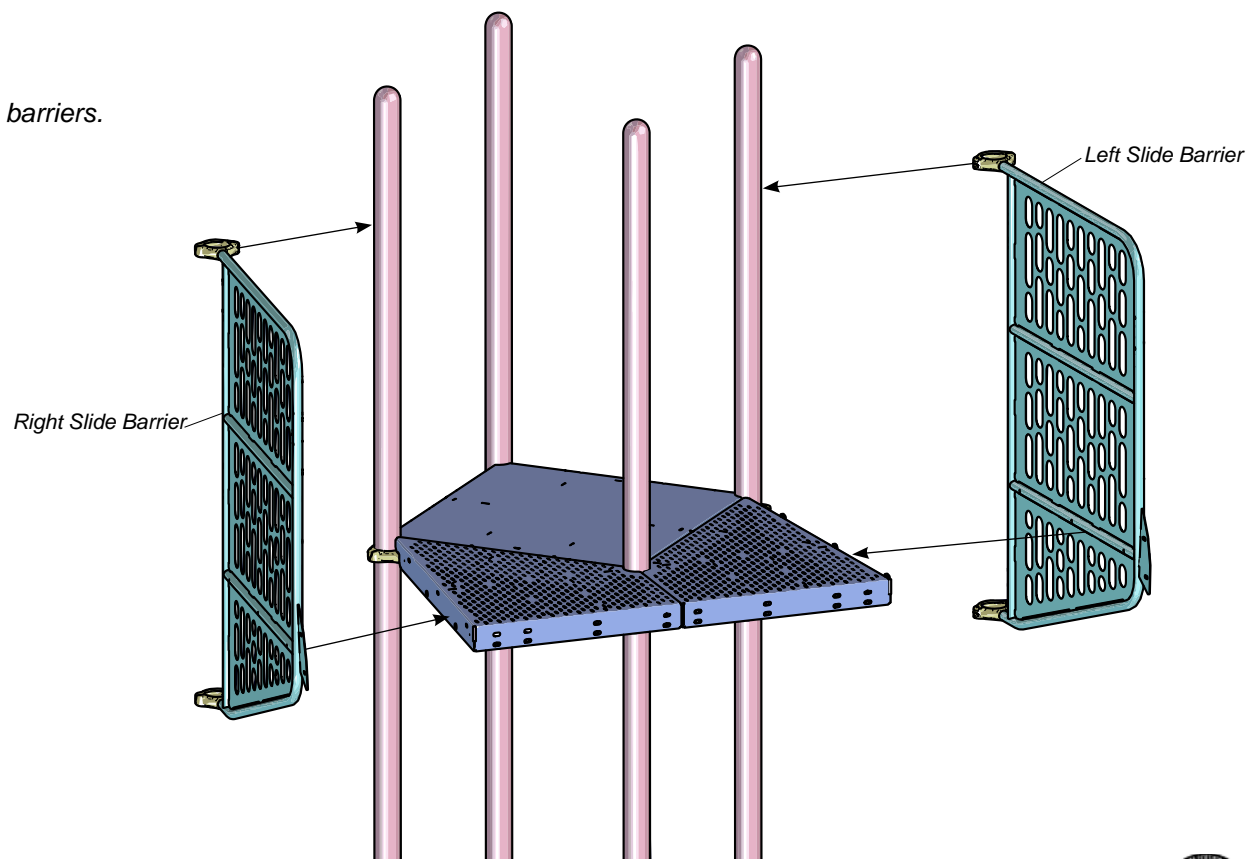
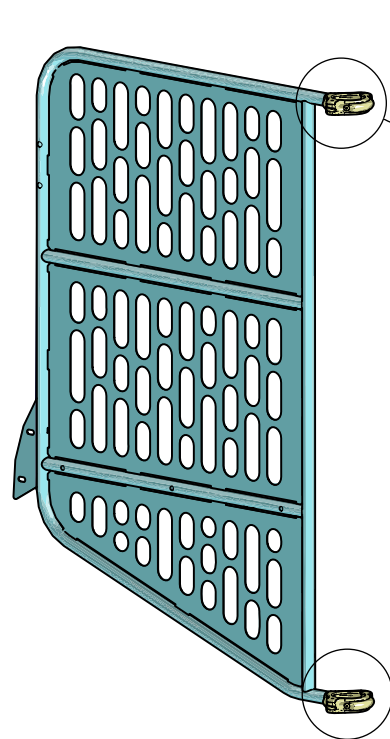


Installation Instructions

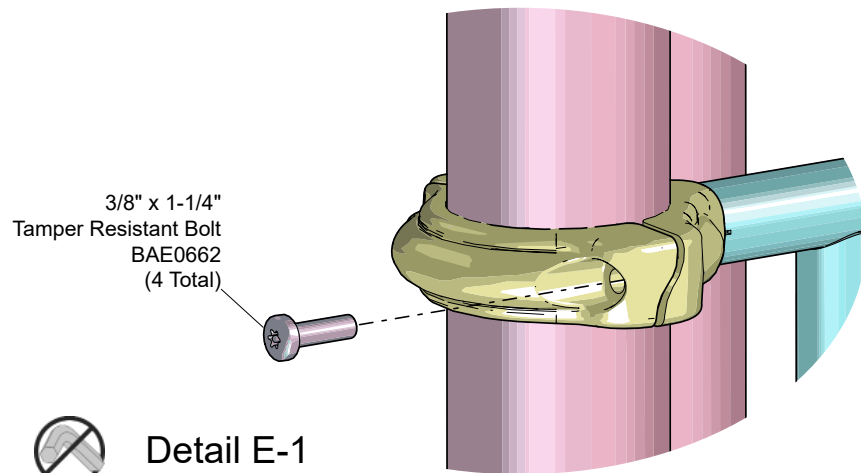


Detail D Step 7

Attach the clamps to the slide barriers.



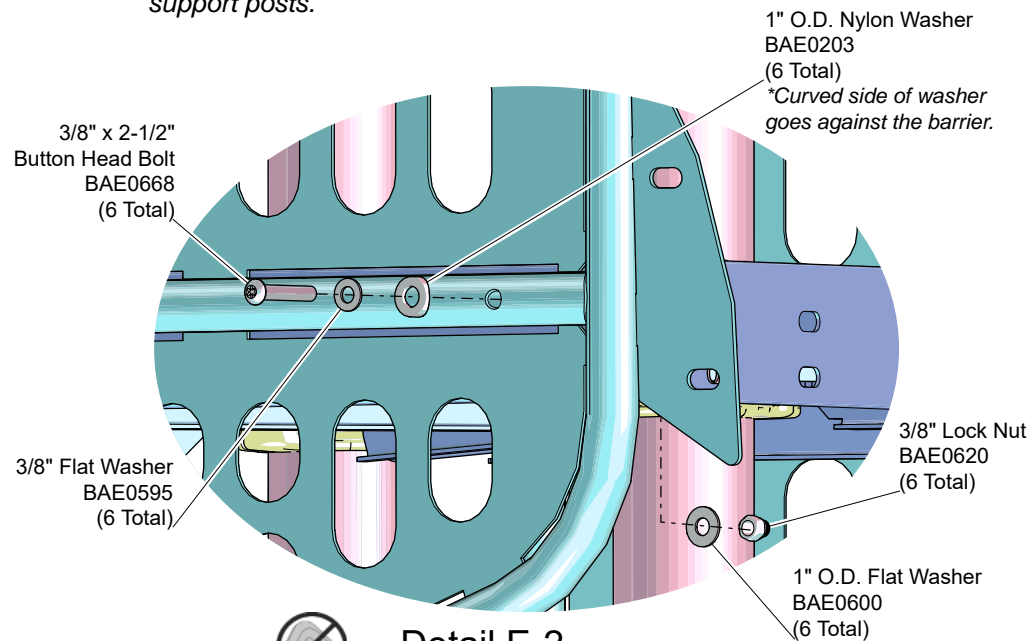
Installation Instructions



Detail E-1

Step 8

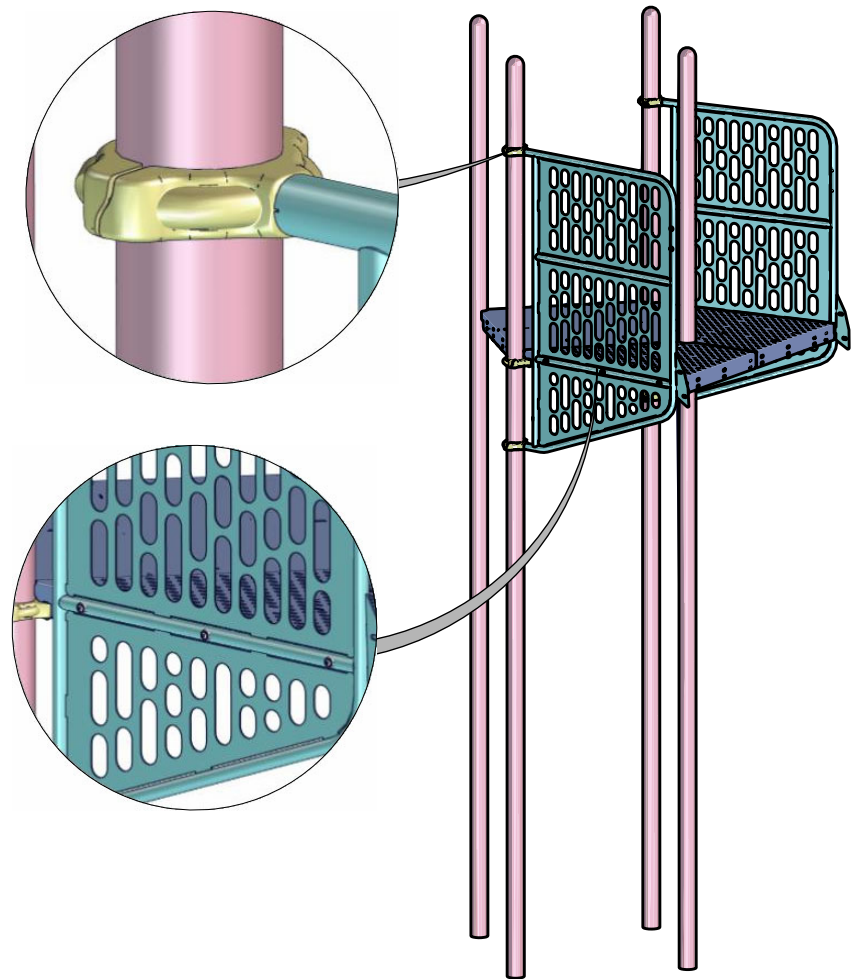
Attach the slide barriers to the support posts.



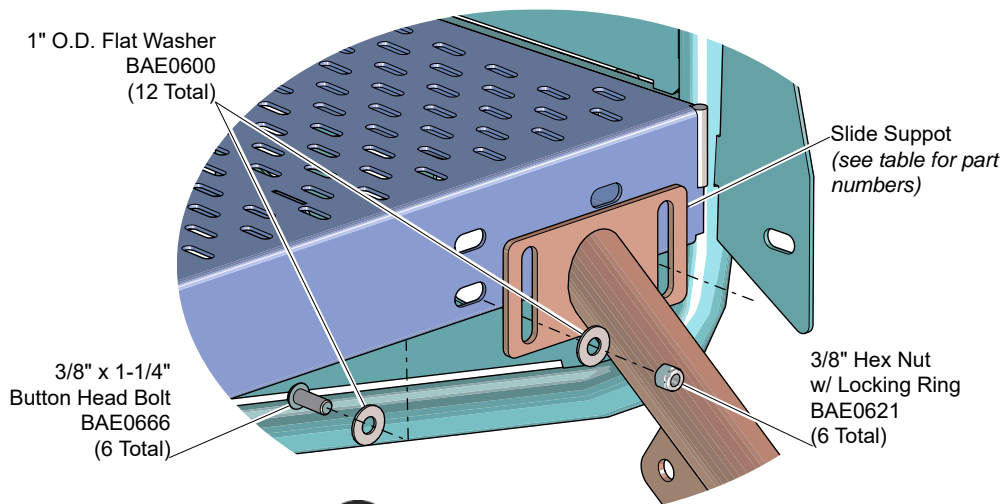
Detail E-2

Step 8

Attach the slide barriers to the slide platforms.



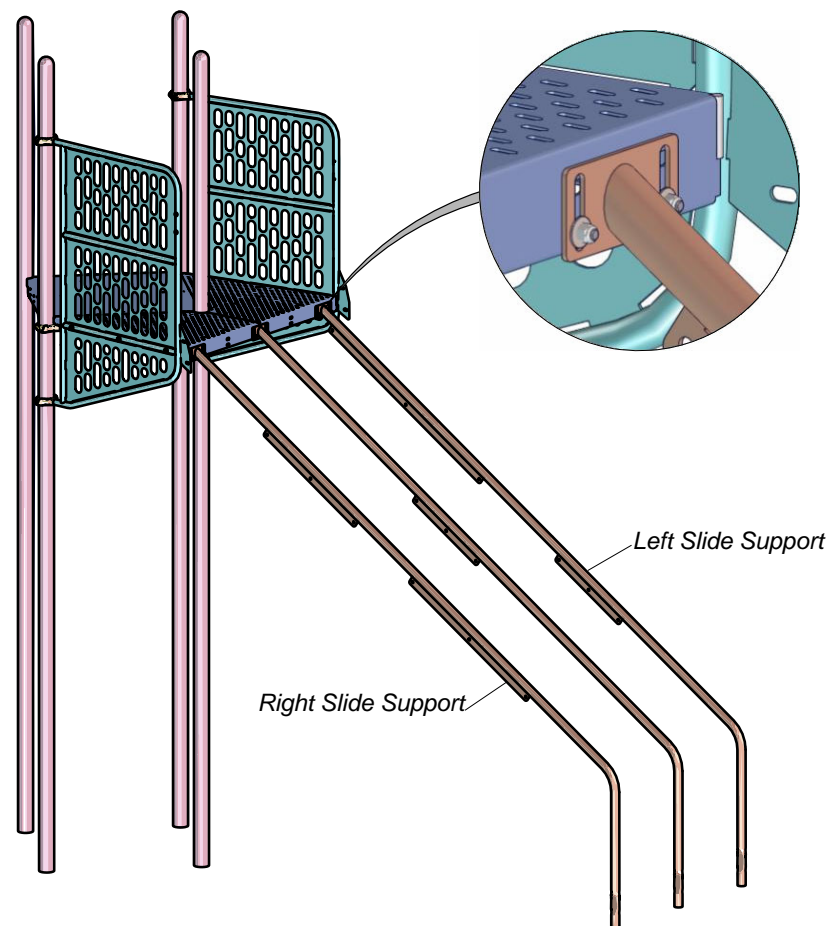
Installation Instructions



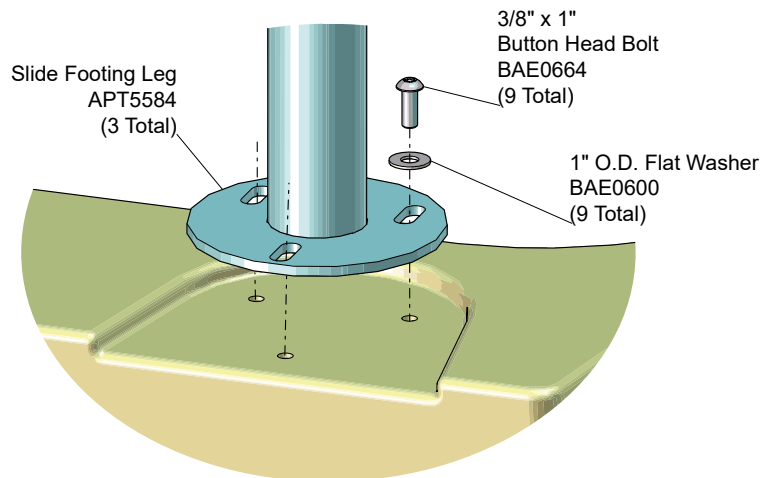
 **Detail F**
Step 9
Attach the slide supports to the platforms.

Important Note: Attach the slide supports to the platforms through the **bottom holes only**.

Slide Support Position	In-Ground Version Part Number	Surface Mount Version Part Number
Left	AFR2513	AFR2512
Middle	AFR2515	AFR2514
Right	AFR2517	AFR2516



Installation Instructions

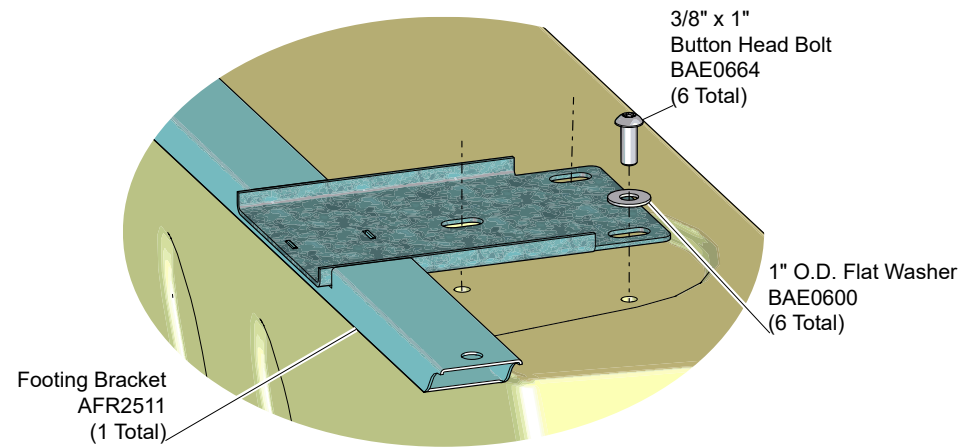
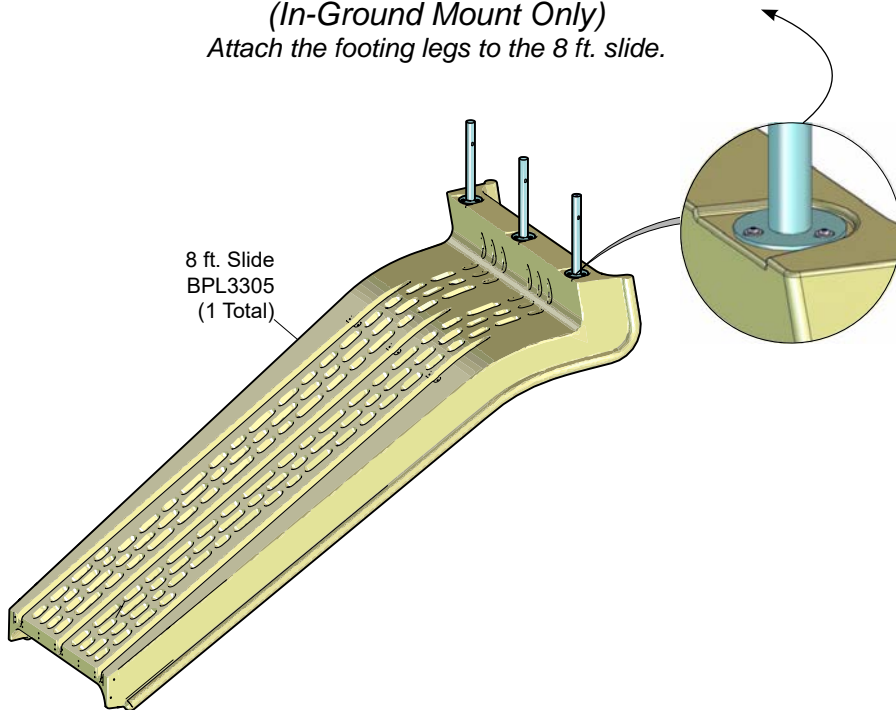


Detail G

Step 10

(In-Ground Mount Only)

Attach the footing legs to the 8 ft. slide.

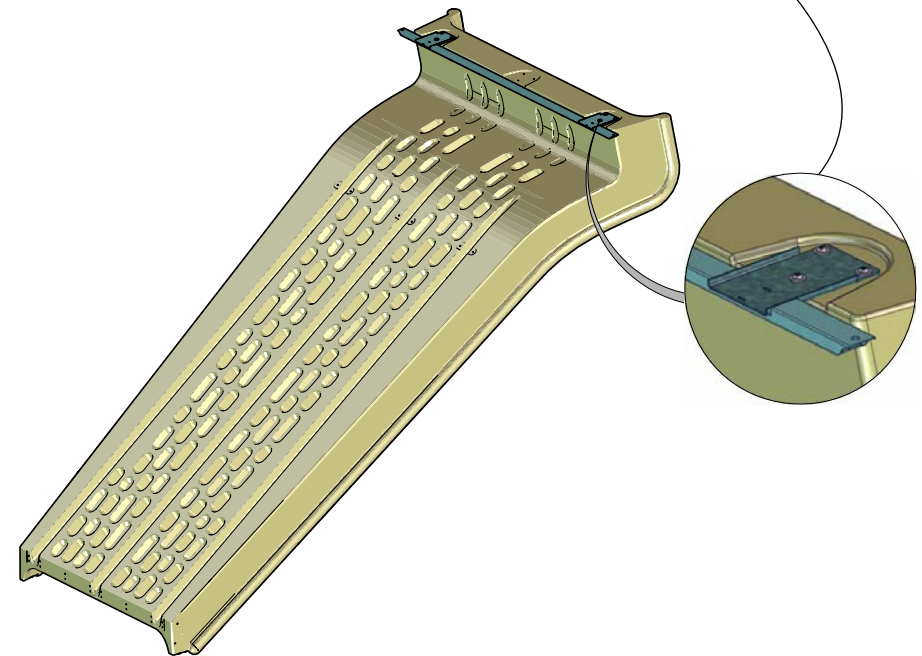


Detail H

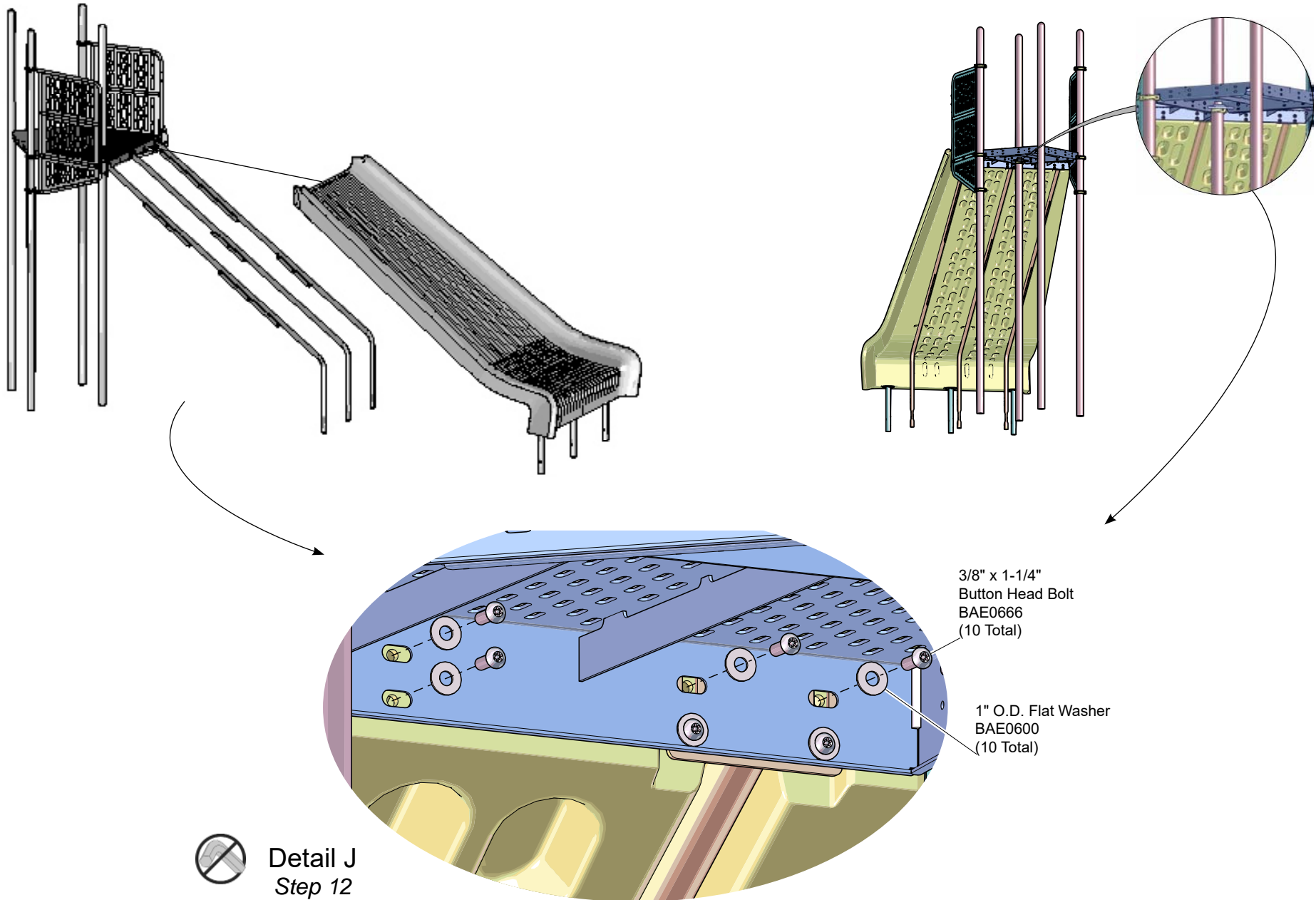
Step 11

(Surface Mount Only)

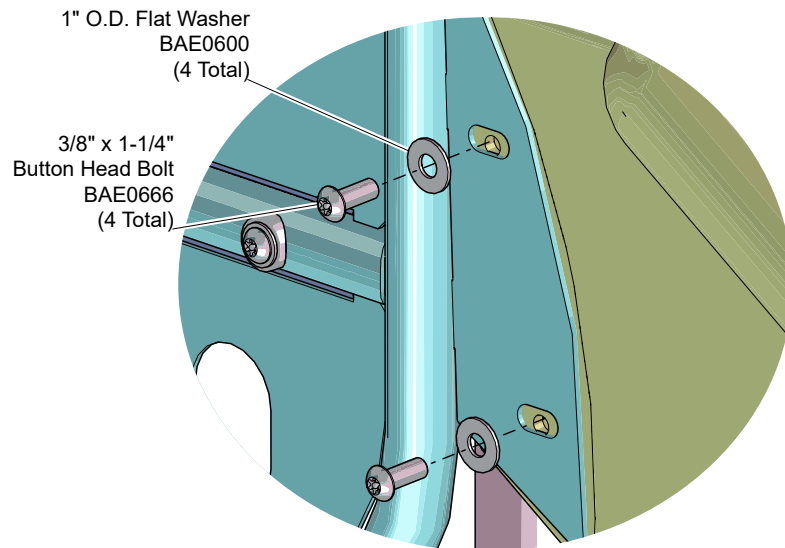
Attach the footing bracket to the 8 ft. slide.



Installation Instructions



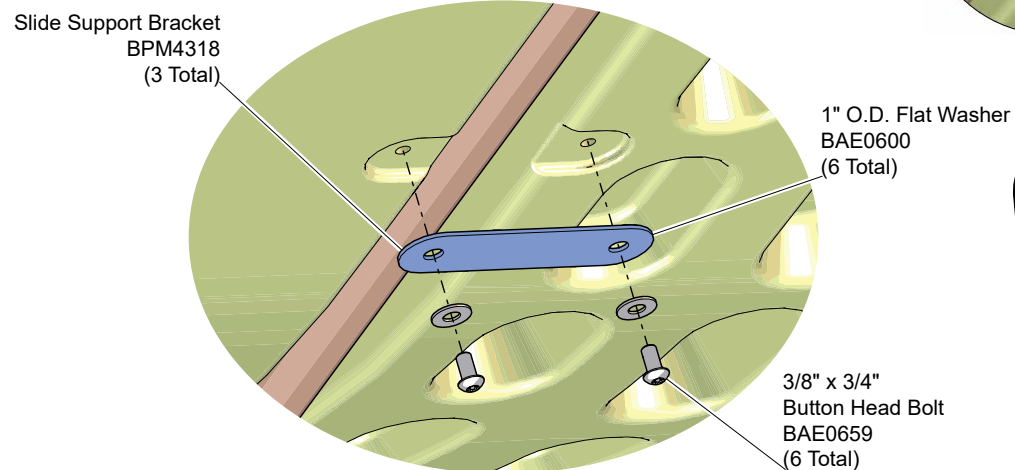
Installation Instructions



Detail K
Step 13

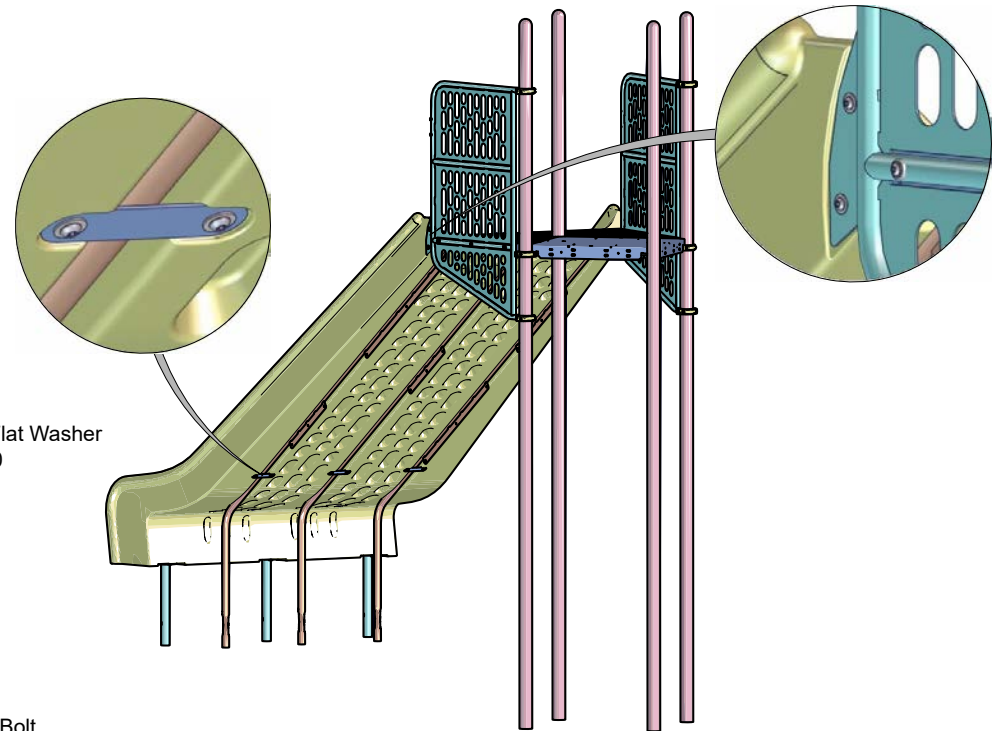


Attach the slide barriers to the slide.

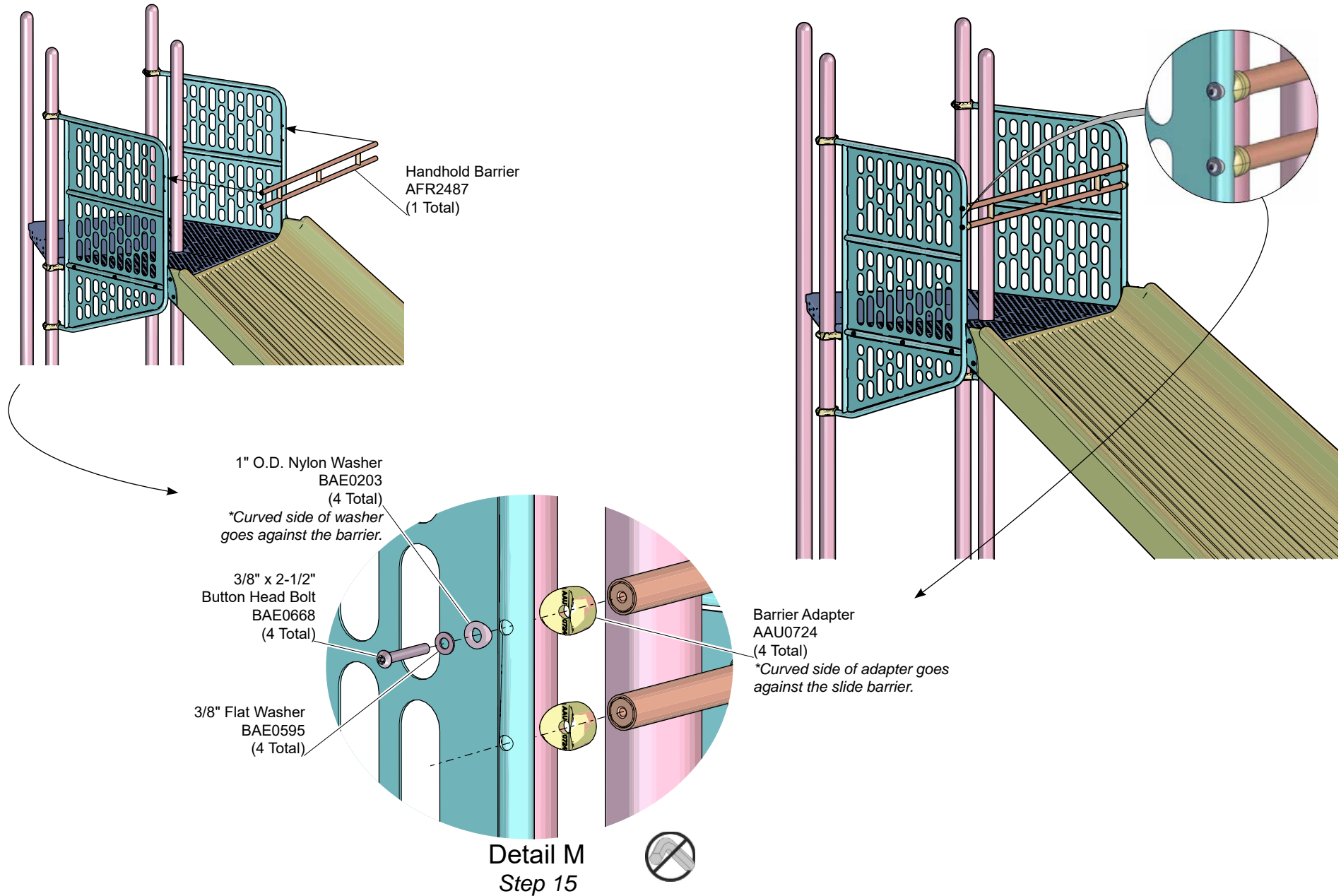


Detail L
Step 14

*Attach the slide support brackets
to the bottom of the slide.*

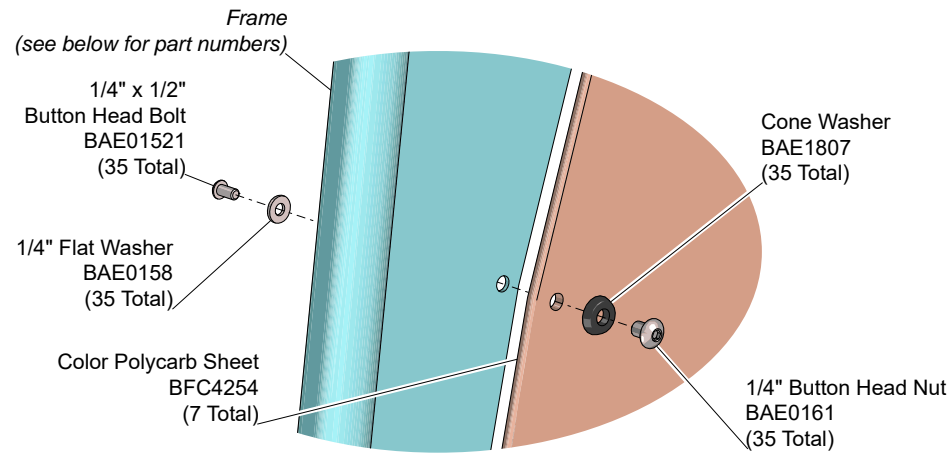


Installation Instructions



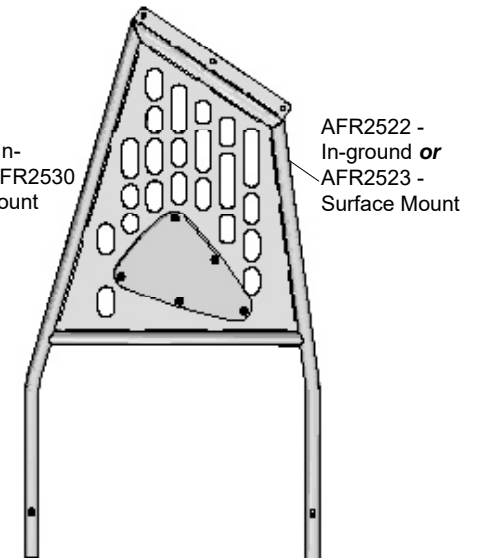
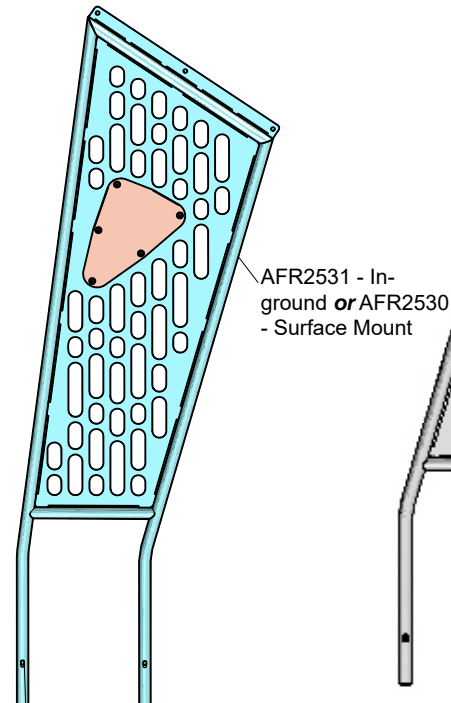
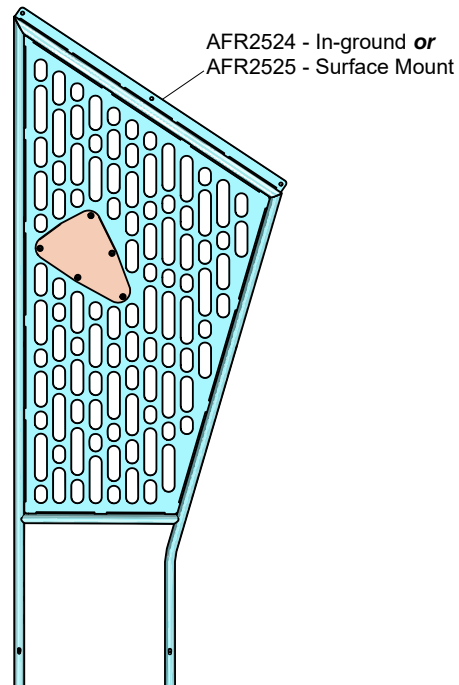
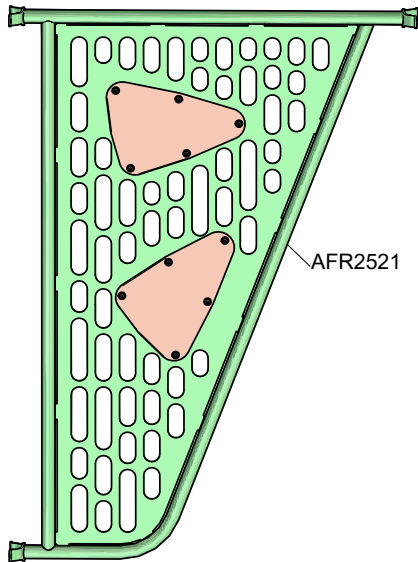
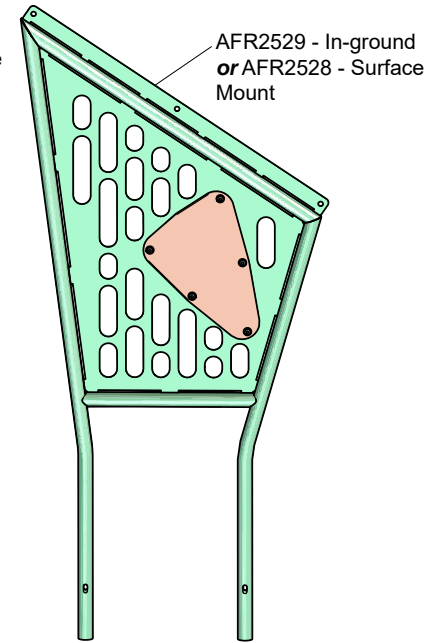
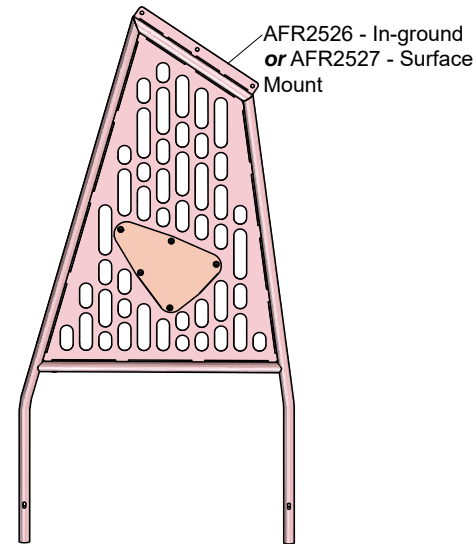
Attach the handhold barrier to the slide barriers.

Installation Instructions

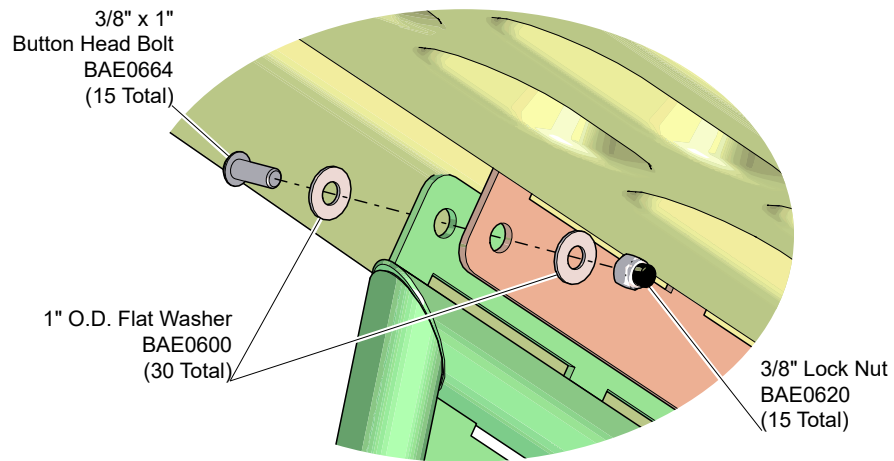


Detail N Step 16

Attach the color Polycarb sheets
to the frames.



Installation Instructions



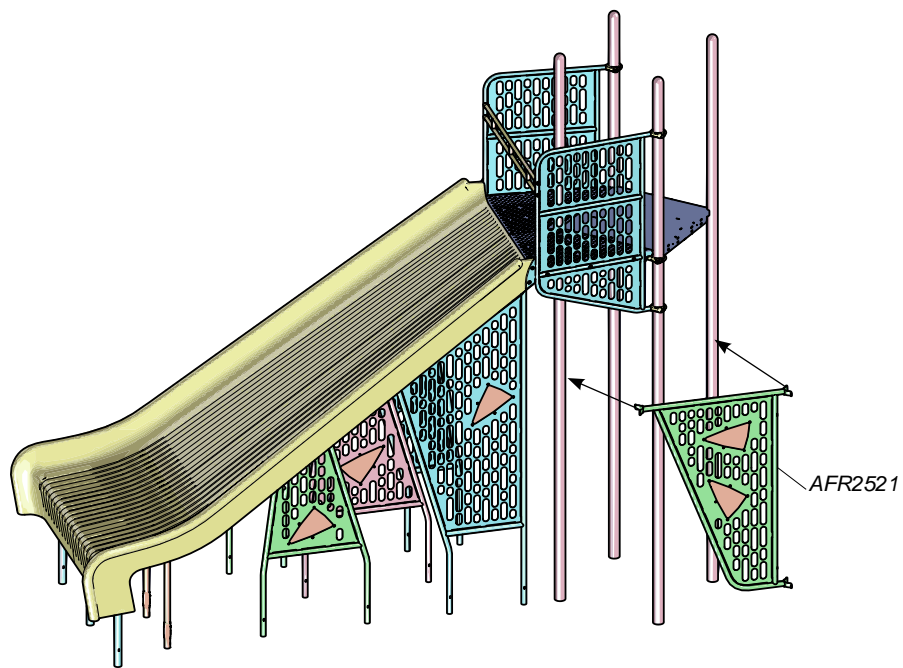
Detail O Step 17

Attach the frames to the slide supports.

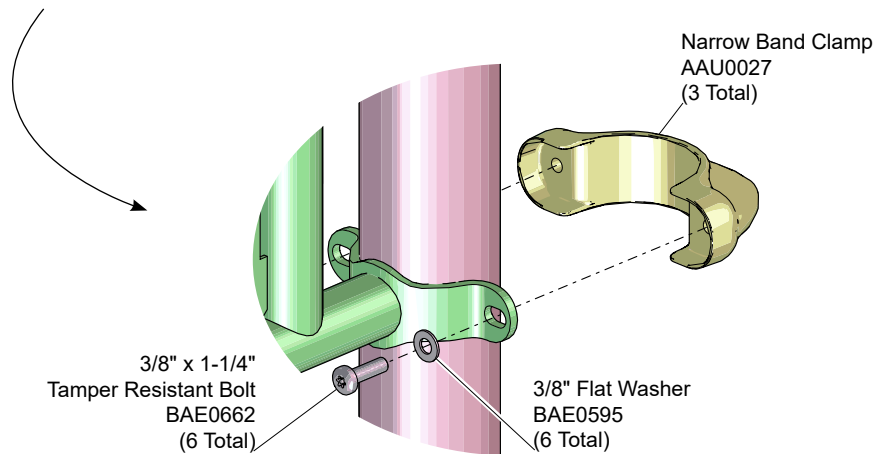
	In-Ground Frames	Surface Mount Frames
Left Slide Support	AFR2524 and AFR2522	AFR2525 and AFR2523
Middle Slide Support	AFR2526	AFR2527
Right Slide Support	AFR2531 and AFR25	AFR2530 and AFR2528



Installation Instructions

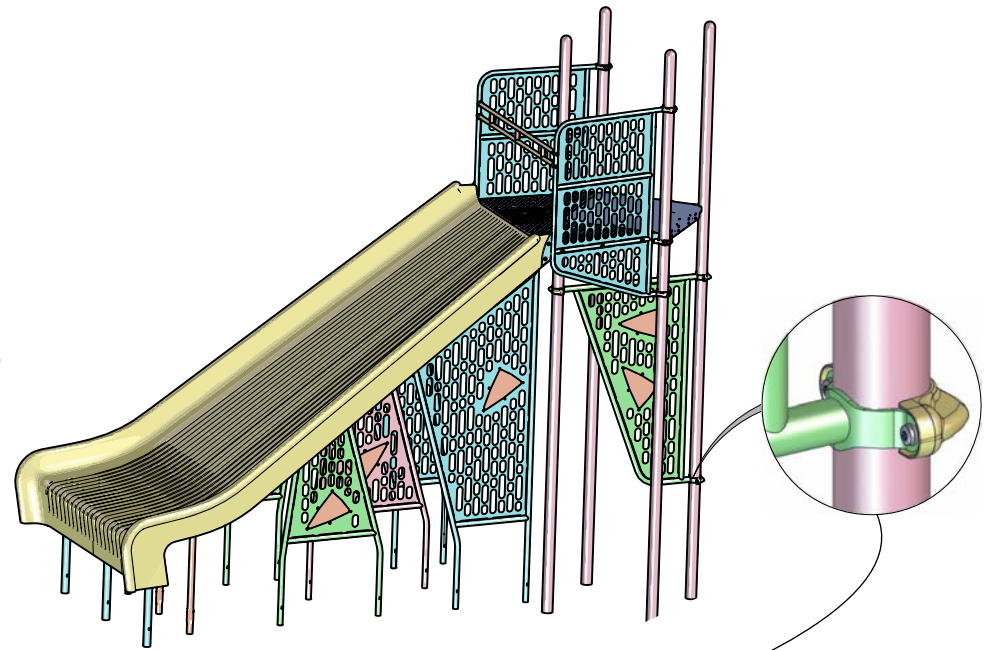


AFR2521

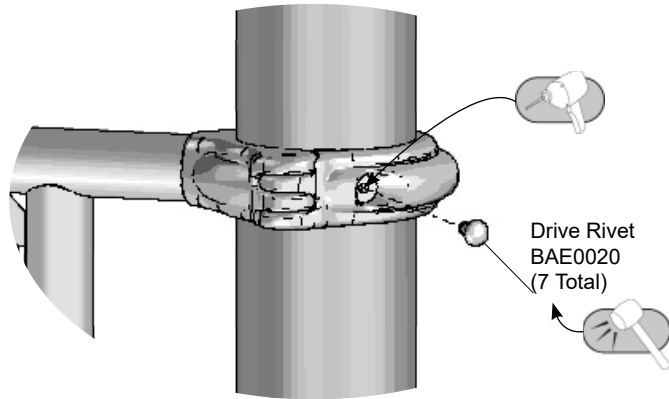


Detail P
Step 18

Attach the AFR2521 frame to the support posts.



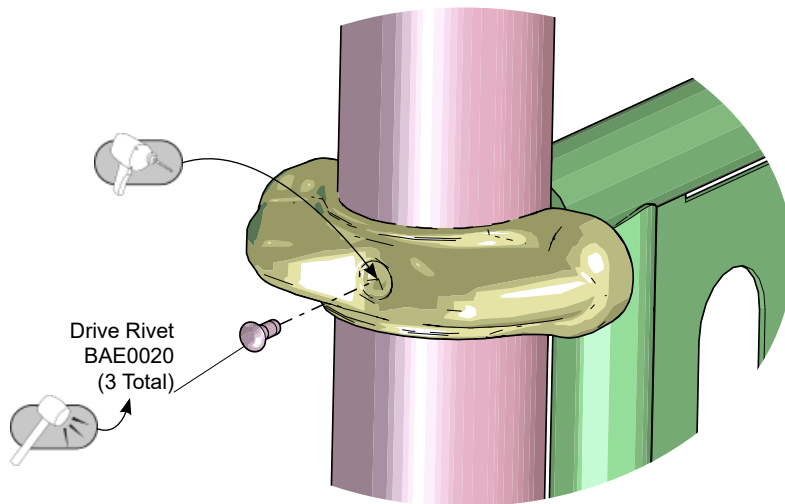
Installation Instructions



Detail Q-1

Step 20

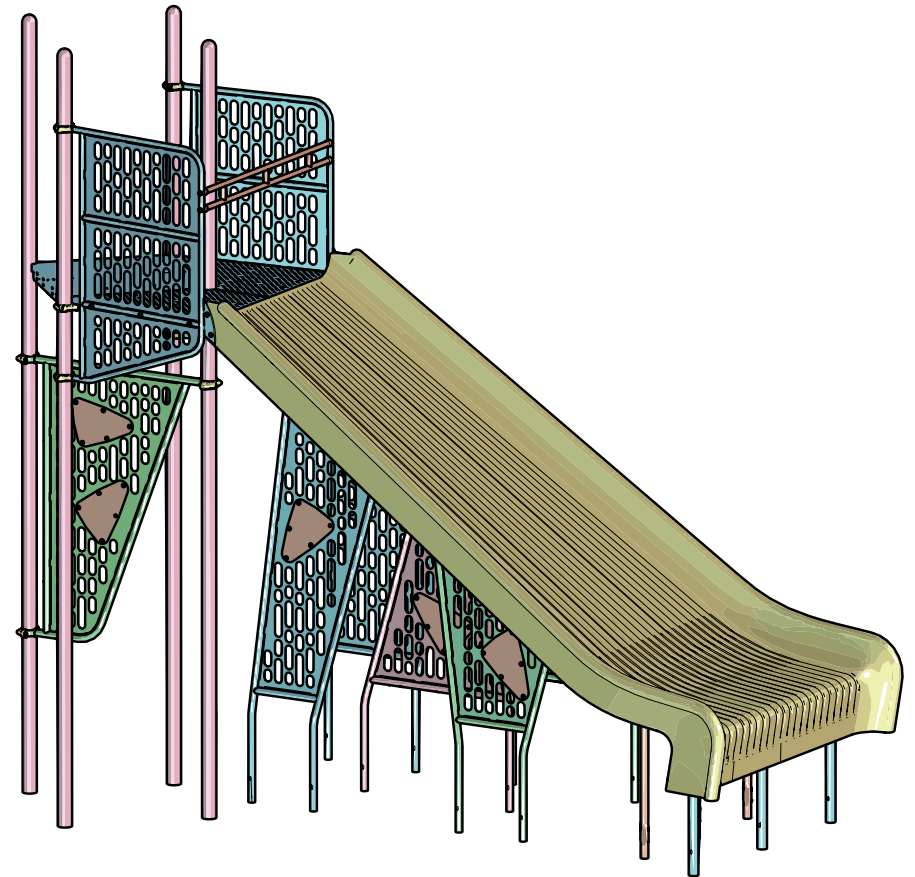
Secure the centerline clamps and deck clamps to the support posts.



Detail Q-2

Step 20

Secure the narrow band clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare footings as shown in the **Component or Surface Mount Footing Details** on pages 6 and 7 of this installation document.

Step 4: Attach the deck clamps to the existing support posts. See **Detail A**. Close the deck clamps around the support posts, and attach as shown.

Note: One deck clamp per support post, refer to the Master Layout Drawing for placement.

Step 5: Attach the slide platforms to the deck clamps. See **Detail B**. Lower the slide platforms onto the deck clamps, and attach as shown.

Step 6: Attach the slide platforms to the existing deck and to each other. See **Detail C**. Align the holes on the slide platforms with the existing deck, and attach through the top set of holes on the platforms as shown. Attach the slide platforms to each other as shown.

Step 7: Attach the clamps to the slide barriers. See **Detail D**. Place the clamps over the ends of the slide barriers, and attach as shown.

Step 8: Attach the slide barriers to the support posts. See **Details E-1 and E-2**. Position the slide barriers against the sides of the slide platforms. Close the clamps around the support posts, and attach as shown.

Step 9: Attach the slide supports to the platforms. See **Detail F**. Place the bracket end of the slide supports against the platforms, align the holes, and attach as shown.

Important Note: Attach the slide supports to the platforms through the bottom holes only.

Step 10 (In-Ground Mount Only): Attach the footing legs to the 8 ft. slide. See **Detail G**. Position the footing legs on the bottom of the slide, and attach as shown.

Step 11 (Surface Mount Only): Attach the footing bracket to the 8 ft. slide. See **Detail H**. Position the footing bracket to the bottom of the slide, and attach as shown.

Step 12: Attach the slide to the platforms. See **Detail J**. With adequate manpower, position the slide on top of the slide supports and against the platforms, and attach as shown.

Step 13: Attach the slide barriers to the slide. See **Detail K**. With the holes aligned on the side of the slide and the barriers, attach as shown.

Step 14: Attach the slide support brackets to the bottom of the slide. See **Detail L**. Place the slide support bracket against the bottom of the slide, and attach as shown.

Step 15: Attach the handhold barrier to the slide barriers. See **Detail M**. Position the handhold barrier between the slide barriers, and attach as shown.

Step 16: Attach the Polycarb sheets to the frames. See **Detail N**. Place the Color Polycarb sheet against the opening in the frame, align the holes, and attach as shown.

Step 17: Attach the frames to the slide supports. See **Detail O**. Place the frames under the slide, align with the holes on the slide supports, and attach as shown.

Step 18: Attach the AFR2521 frame to the support posts. See **Detail P**. Position the frame between the support posts and attach as shown.

Installation Instructions

Final Details.

Step 19: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-ground Mount: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 20: Install drive rivets. See **Details Q-1 and Q-2**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

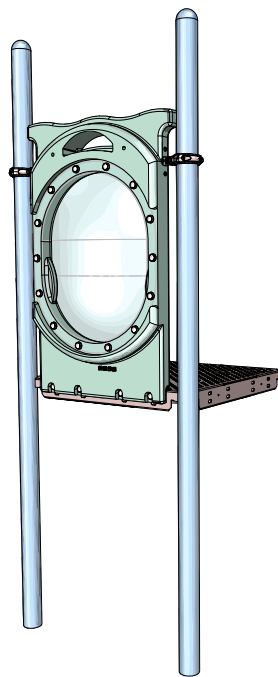


CH4695 - MIGHTY DESCENT W/ PRISM PASS

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3.50" NARROW ALUMINUM BAND	3
AAU0230	CLAMP - 3.50" DECK HANGER DIE CAST	3
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	4
AAU0724	CASTING - 1.315" DIA ADAPTER	4
AEN0667	FRAME - 63.32" x 42.91" x 1.32" (RIGHT)	1
AEN0668	FRAME - 63.32" x 42.91" x 1.32" (LEFT)	1
AFR2487	FRAME - 58.13" x 5.57" x 1.32"	1
AFR2513	FRAME - 122.20" x 119.07" x 5.75" LEFT	1
AFR2515	FRAME - 122.20" x 119.07" x 5.57" MIDDLE	1
AFR2517	FRAME - 122.20" x 119.07" x 5.75" RIGHT	1
AFR2521	FRAME - 70.50" x 50.65" x 6.31"	1
AFR2522	FRAME - 69.97" x 36.39" x 1.66"	1
AFR2524	FRAME - 114.42" x 44.81" x 1.66"	1
AFR2526	FRAME - 85.44" x 42.83" x 8.00"	1
AFR2529	FRAME - 74.01" x 35.11" x 8.00"	1
AFR2531	FRAME - 102.32" x 37.58" x 1.66"	1
APT5584	POST - SLIDE FOOTING	3
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	10
BAE0158	WASHER - 1/4" SAE FLAT	35
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	35
BAE0203	WASHER - NYLON COVED .53" I.D. x 1.00" O.D.	10
BAE0595	WASHER - 3/8" SAE FLAT	20
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	103
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	34
BAE0621	NUT - 3/8"-16 ZINC HEX w/ LOCKING RING	6
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	13
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	28
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	30
BAE0668	BOLT - 3/8"-16 x 2.50" BUTTON HEAD - SS	13
BAE01521	BOLT - 1/4"-20 x .50" BUTTON HEAD - SS	35
BAE1807	CONE WASHER - .89" O.D. x .39" I.D. x .20"	35
BFC4254	COLOR POLYCARB - 17.63" x 11.55" x .25"	7
BPL3305	SLIDE - 8' DISTINCTIVE	1
BPM4316	PLATFORM - DISTINCTIVE SLIDE (CH) (RIGHT)	1
BPM4317	PLATFORM - DISTINCTIVE SLIDE (CH) (LEFT)	1
BPM4318	SHEET METAL - 6.75" x 1.75" x 12GA	3

CH4695S - MIGHTY DESCENT W/ PRISM PASS SURFACE MOUNT

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3.50" NARROW ALUMINUM BAND	3
AAU0230	CLAMP - 3.50" DECK HANGER DIE CAST	3
AAU0556	CLAMP - 3.50" CENTERLINE DIECAST	4
AAU0724	CASTING - 1.315" DIA ADAPTER	4
AEN0667	FRAME - 63.32" x 42.91" x 1.32" (RIGHT)	1
AEN0668	FRAME - 63.32" x 42.91" x 1.32" (LEFT)	1
AFR2487	FRAME - 58.13" x 5.57" x 1.32"	1
AFR2511	FRAME - 84.00" x 8.75" x 1.00"	1
AFR2512	FRAME - 125.07" x 97.07" x 8.00" LEFT	1
AFR2514	FRAME - 125.07" x 97.07" x 8.00" MIDDLE	1
AFR2516	FRAME - 125.07" x 97.07" x 8.00" RIGHT	1
AFR2521	FRAME - 70.50" x 50.65" x 6.31"	1
AFR2523	FRAME - 47.97" x 42.73" x 8.00"	1
AFR2525	FRAME - 92.17" x 47.98" x 8.00"	1
AFR2527	FRAME - 63.44" x 49.06" x 8.00"	1
AFR2528	FRAME - 52.01" x 35.11" x 8.00"	1
AFR2530	FRAME - 80.32" x 40.13" x 8.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	10
BAE0158	WASHER - 1/4" SAE FLAT	35
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	35
BAE0203	WASHER - NYLON COVED .53" I.D. x 1.00" O.D.	10
BAE0595	WASHER - 3/8" SAE FLAT	20
BAE0600	1" O.D. x .437" I.D. STAINLESS STEEL FLAT WASHER	100
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	34
BAE0621	NUT - 3/8"-16 ZINC HEX w/ LOCKING RING	6
BAE0659	BOLT - 3/8"-16 x .75" BUTTON HEAD - SS	6
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	13
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	25
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	30
BAE0668	BOLT - 3/8"-16 x 2.50" BUTTON HEAD - SS	13
BAE01521	BOLT - 1/4"-20 x .50" BUTTON HEAD - SS	35
BAE1807	CONE WASHER - .89" O.D. x .39" I.D. x .20"	35
BFC4254	COLOR POLYCARB - 17.63" x 11.55" x .25"	7
BPL3305	SLIDE - 8' DISTINCTIVE	1
BPM4316	PLATFORM - DISTINCTIVE SLIDE (CH) (RIGHT)	1
BPM4317	PLATFORM - DISTINCTIVE SLIDE (CH) (LEFT)	1
BPM4318	SHEET METAL - 6.75" x 1.75" x 12GA	3



Assembly View

Installation Instructions

Challengers® Model CH4811


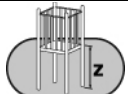

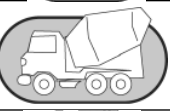
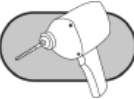


Oval Bubble Panel

Deck Mount

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 1 man-hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

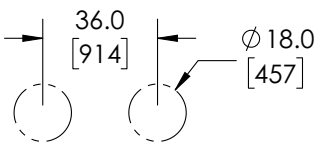
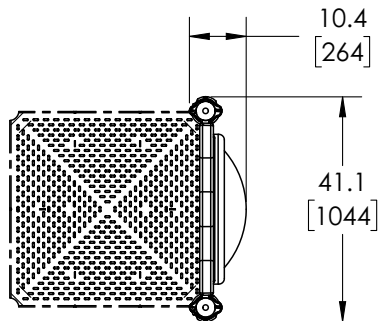
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

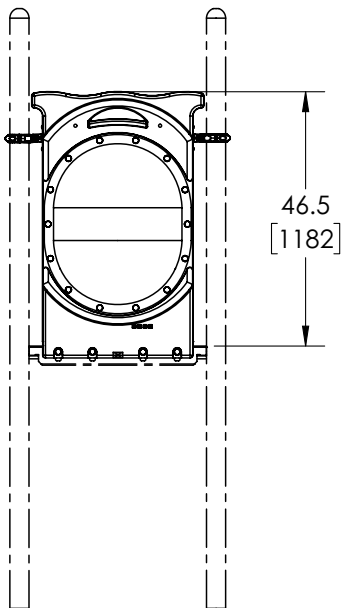
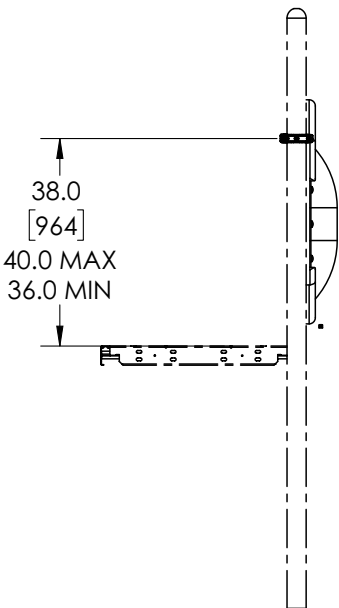
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footings Diagram

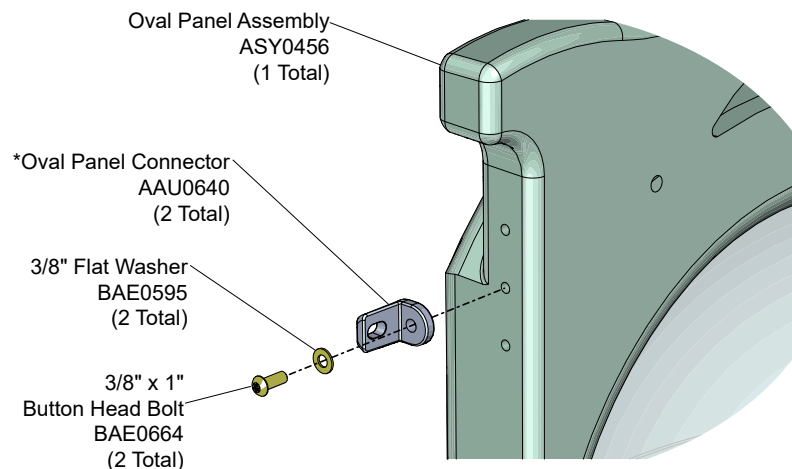


Elevation Views



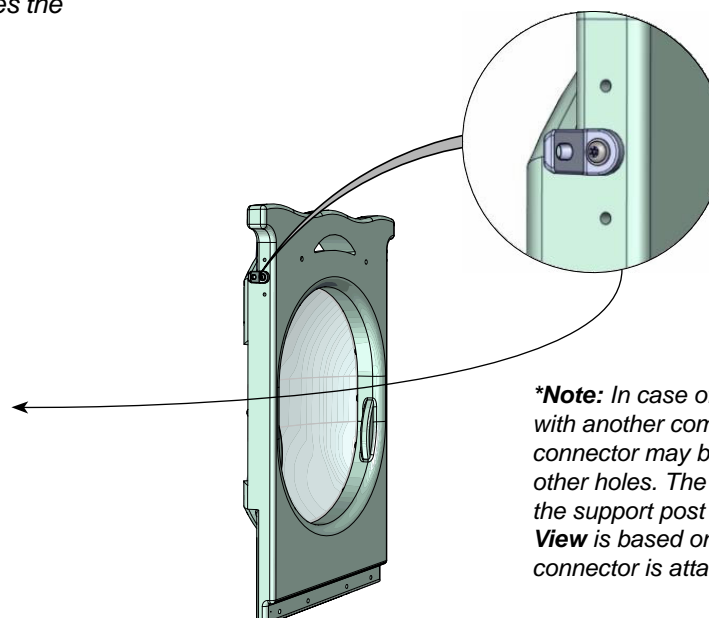
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.

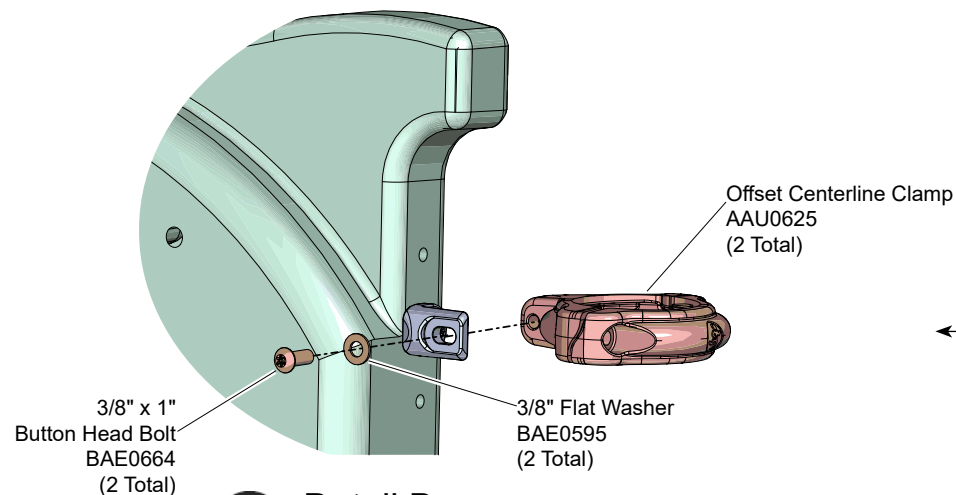


Detail A
Step 3

Attach the panel connectors to the oval panel assembly.

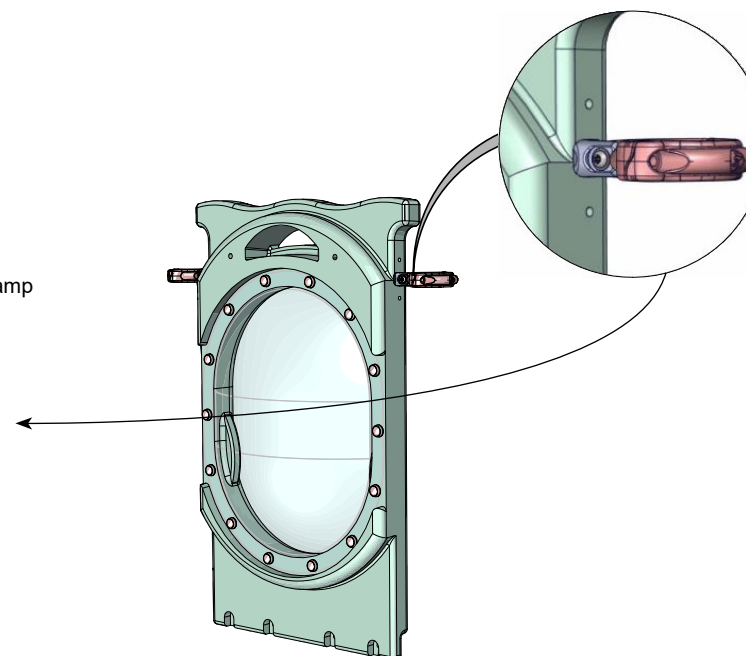


***Note:** In case of clamp interference with another component, the panel connector may be attached to one of the other holes. The height of the clamp on the support post shown in the **Elevation View** is based on to which hole the connector is attached.

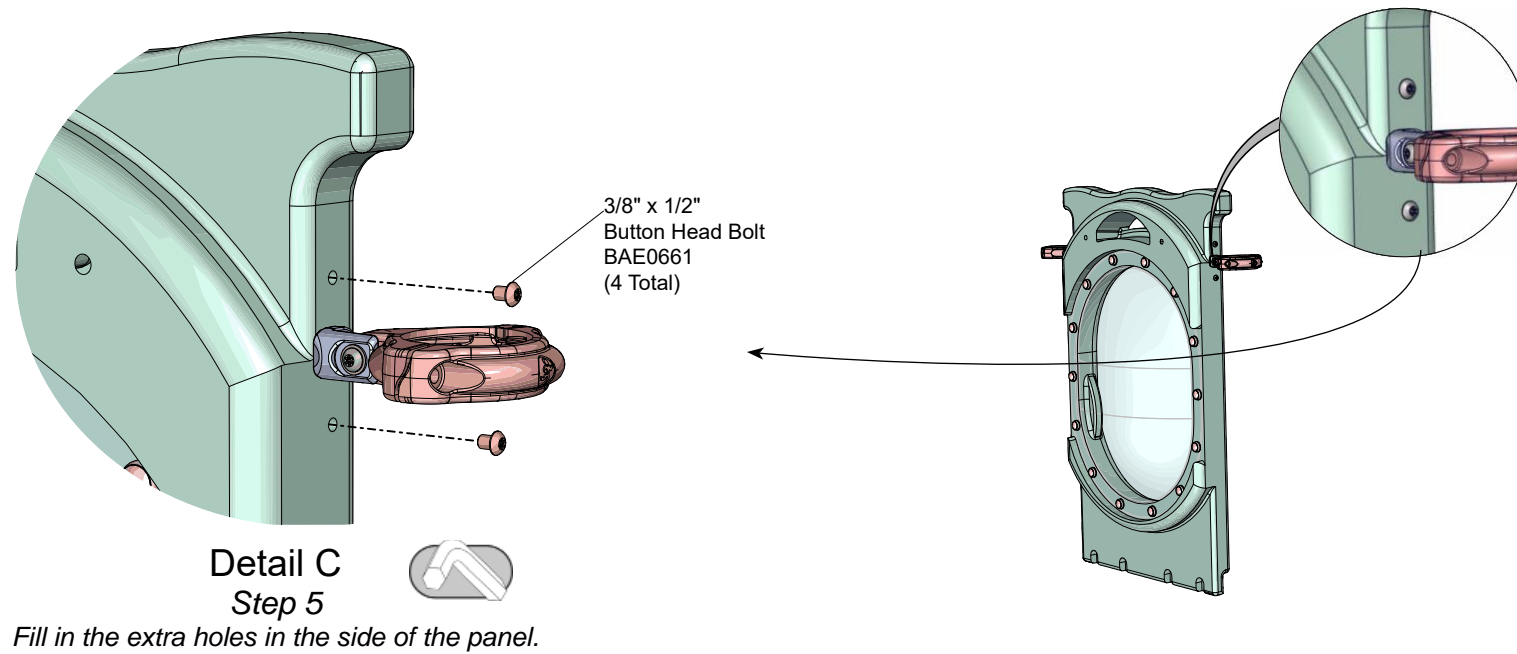


Detail B
Step 4

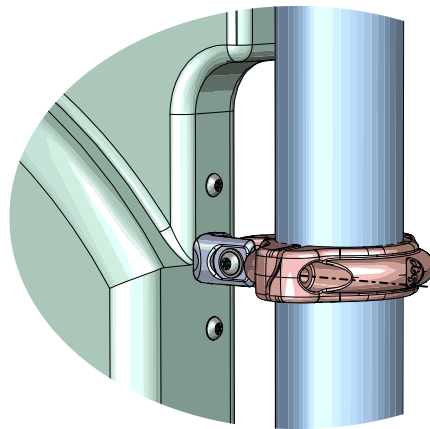
Attach the clamps to the panel connectors.



Installation Instructions



Installation Instructions



3/8" x 1-1/4"
Tamper Resistant Bolt
BAE0662
(2 Total)

Detail D Step 6



Attach the panel assembly to the support posts.

Plastic Washer
(half of a two-piece assembly)
BPL0300
(4 Total)

3/8" x 1-3/4"
Button Head Bolt
BAE0665
(4 Total)

3/8" Flat Washer
BAE0595
(4 Total)

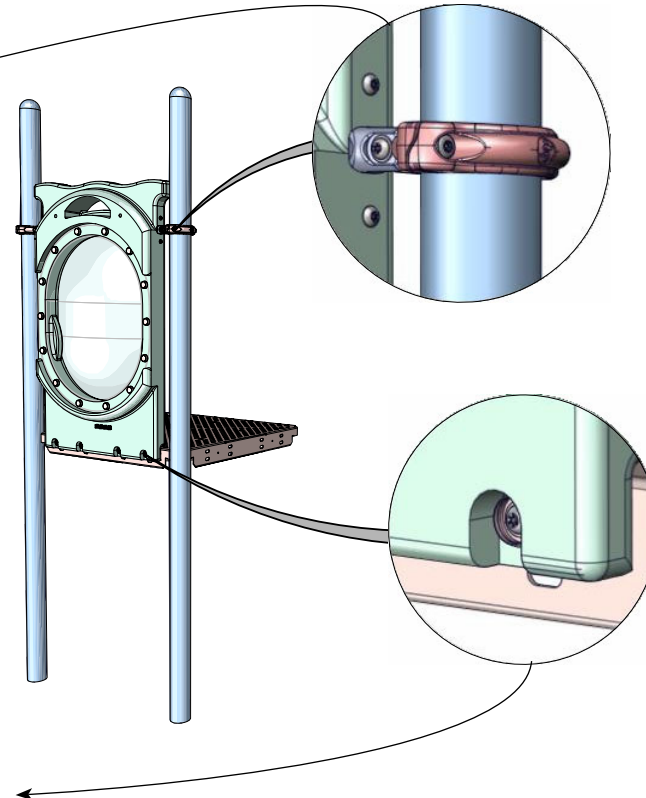
3/8" Lock Nut
BAE0620
(4 Total)

1" O.D. Flat Washer
BAE0600
(4 Total)

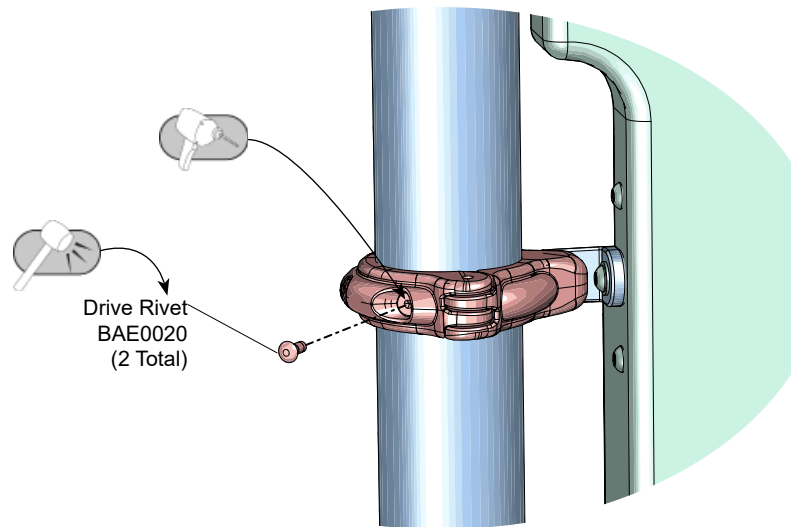


Detail E Step 7

Attach the panel assembly to the deck.

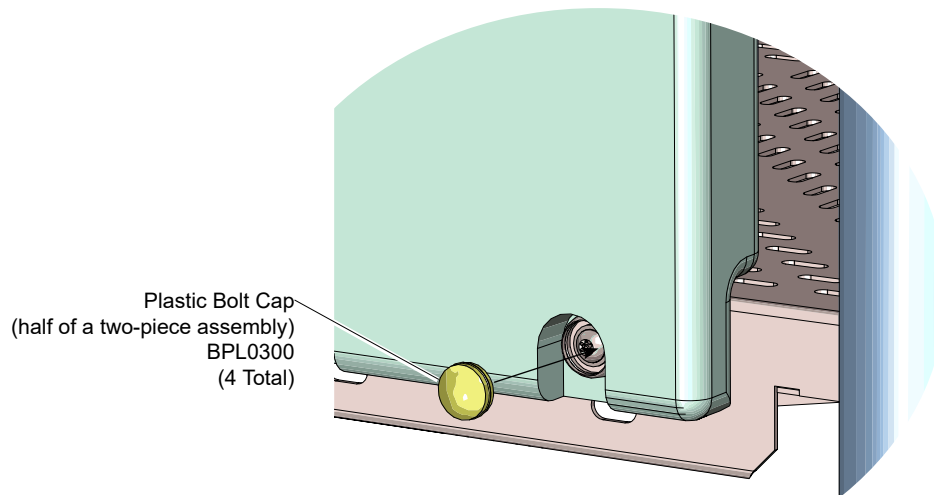


Installation Instructions



Detail F
Step 9

Secure the clamps to the support posts.



Detail G
Step 10

Press the bolt cap into the plastic washer.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete. Do not install bolt caps until the structure is completely assembled and properly footed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the panel connectors to the oval panel assembly. See **Detail A**. Three holes are provided on each side of the panel assembly for attachment of the panel connector. Select the one that best allows you to locate the clamps on the support posts without interference from another component. Position the connector, with the f at part to the deck side of the panel, and attach to the panel as shown. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 4: Attach the clamps to the panel connectors. See **Detail B**. Position the f at section of each clamp against the f at section of a connector, and attach as shown.

Step 5: Fill in the extra holes in the side of the panel. See **Detail C**. Attach as shown to the open holes in the panel. Fully tighten the connections according to tightening torque specifications.

Step 6: Attach the panel assembly to the support posts. See **Detail D**. Position the panel assembly between the support posts with the bottom of the panel against the deck. Close the clamps around the support posts, and attach as shown.

Step 7: Attach the panel assembly to the deck. See **Detail E**. Align the holes in the bottom of the panel with the holes in the deck and attach as shown.

Final Details.

Step 8: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 9: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 10: Select plastic bolt caps and press them into the plastic washers. See **Detail G**. The bolt caps install more easily when they are warm.

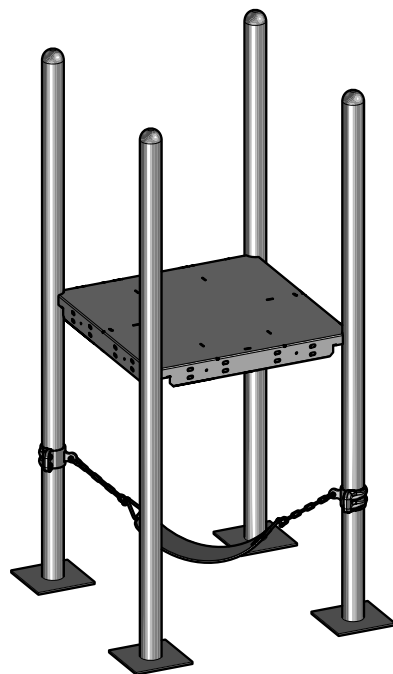
CH4811 - OVAL BUBBLE PANEL DECK MOUNT

PART NO.	DESCRIPTION	QTY.
AAU0625	CLAMP - 3.50" OFFSET CENTERLINE DIE CAST	2
AAU0640	CONNECT - OVAL PANEL	2
ASY0456	ASSEMBLY - BUBBLE PANEL - DECK MOUNT - CH	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	4
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x .50" BUTTON HEAD - SS	4
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	4
BAE0665	BOLT - 3/8"-16 x 1.75" BUTTON HEAD - SS	4
BPL0300	CAP - 3/8" BOLT	4



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Assembly View

Installation Instructions


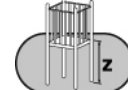

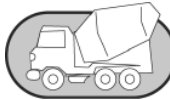



Challengers® Model CH4896

Sling Seat

Installation Preparation

Recommended Crew: One (1) adult
 Installation Time: 0.5 hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

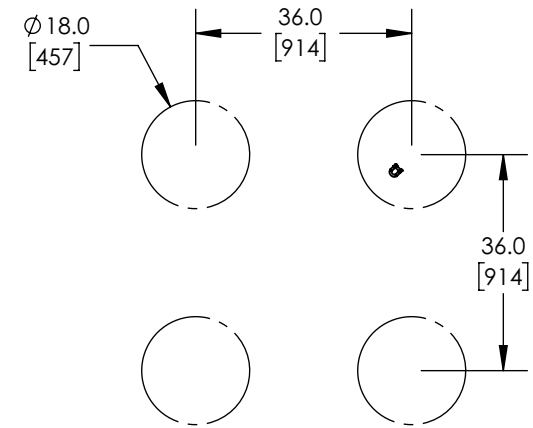
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

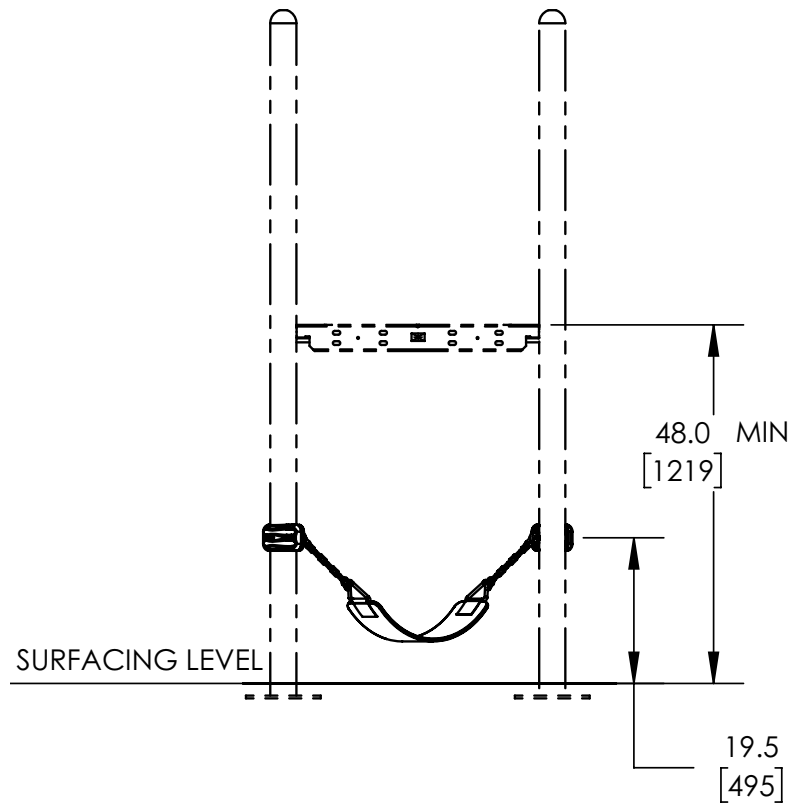
Installation Instructions

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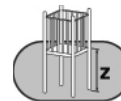
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



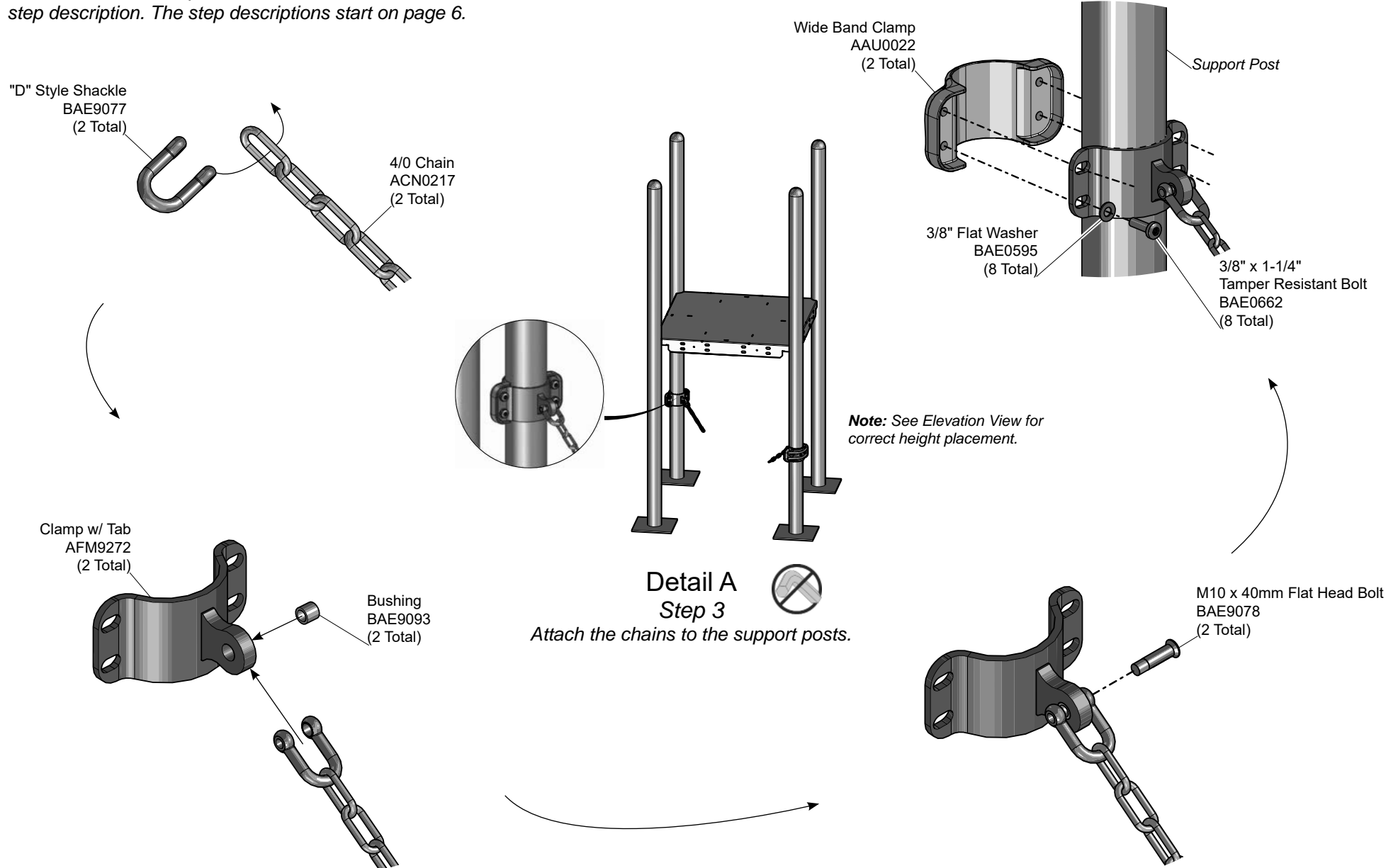
Elevation Views



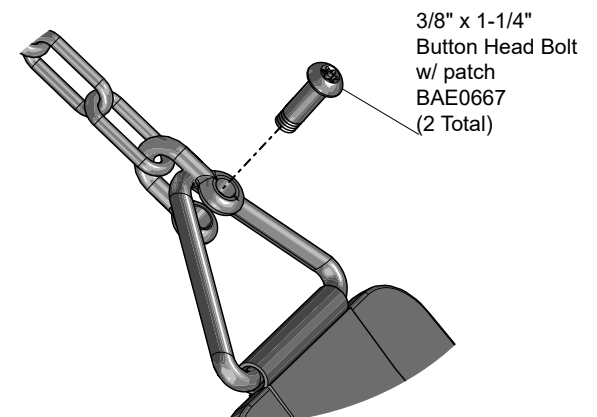
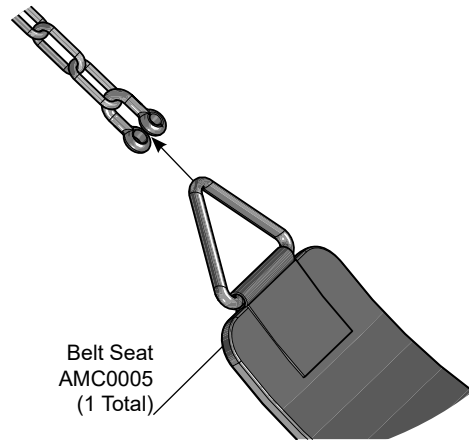
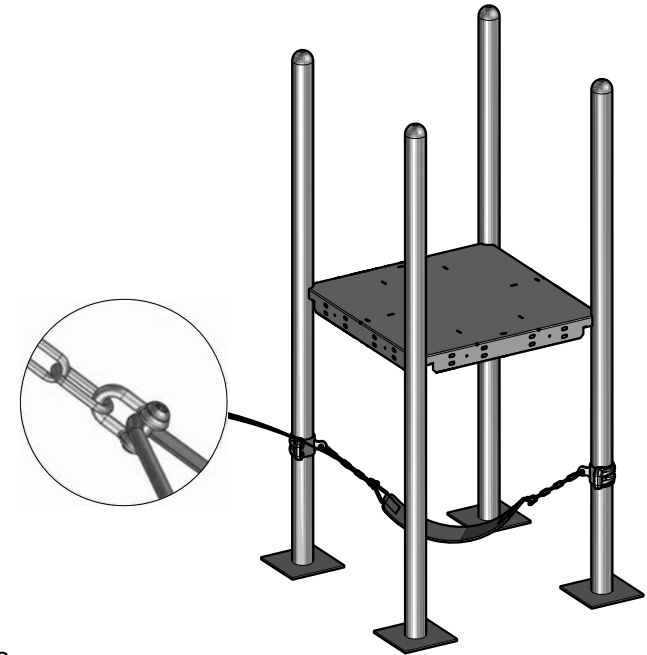
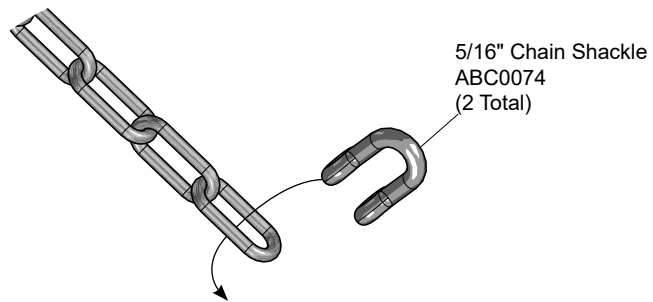
Critical Fall Height:
 ASTM F1487: 10" (254 mm)
 CSA-Z614: 254 mm
 EN1176: 254 mm

Installation Instructions

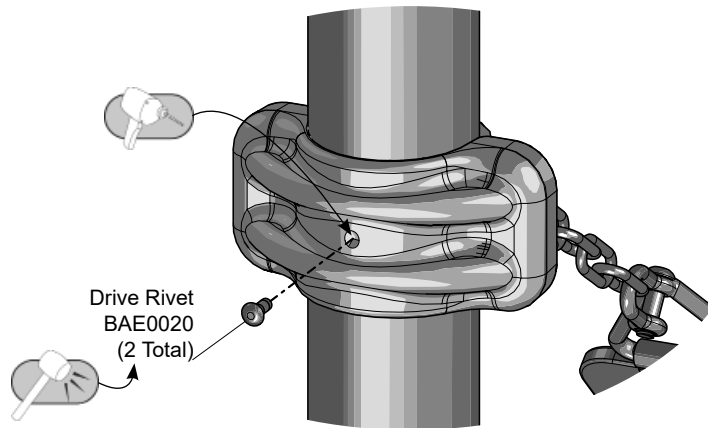
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 6.



Installation Instructions

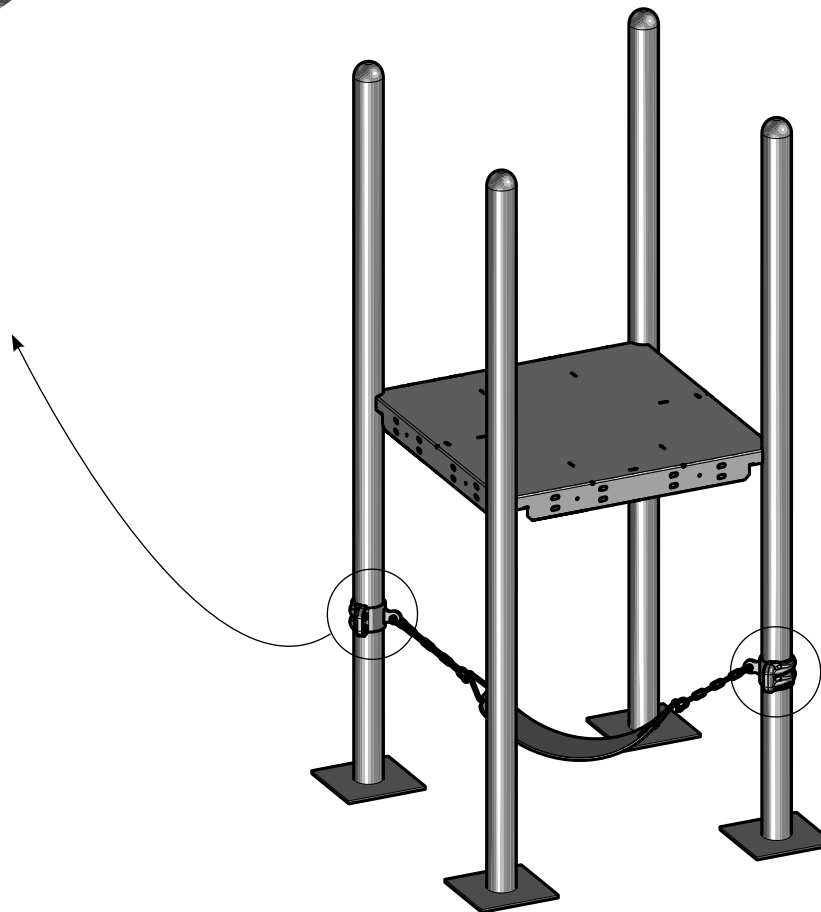


Installation Instructions



Detail C
Step 6

Secure the clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the chains to the support posts. See **Detail A and Elevation View**. Insert the shackle through the last link on one end of the chain, insert the bushing into the tab on the clamp, and attach the chains to the clamps as shown. Position the clamps around the support posts, and attach as shown. Refer to the Elevation View for the correct height placement.

Step 4: Attach the belt seat to the swing chains. See **Detail B**. Insert the shackle through the last link on the other end of the chain, and attach the belt seat as shown.

Final Details.

Step 5: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 6: Install drive rivets. See **Detail C**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH4896 - SLING SEAT

PART NO.	DESCRIPTION	QTY.
AAU0022	CLAMP - 3.50" WIDE ALUMINUM	2
ABC0074	CONNECTOR - 5/16" CHAIN SHKLE w/ 3/8"-16 THREAD	2
ACN0217	CHAIN - 4/0 - 6 LINKS	2
AFM9272	CLAMP - 3.50" O.D. WITH TAB	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	8
BAE0667	BOLT - 3/8" x 1-1/4" BUTTON HEAD w/ NYLON PATCH	2
BAE9077	SHACKLE - "D" STYLE	2
BAE9078	BOLT - M10 x 1.5 x 40mm FLAT HEAD	2
BAE9093	BUSHING - .399" I.D. x .560" O.D. x .500"	2



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Assembly View (representative model)

Installation Instructions

Challengers® Models CH6596 & CH6597


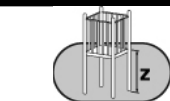

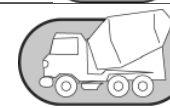
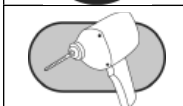

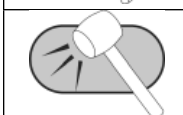
Adventure Bridge

120 in. (3048 mm) & 72 in. (1829 mm)

Installation Preparation

Recommended Crew: Four (4) adults
 Installation Time: 3 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

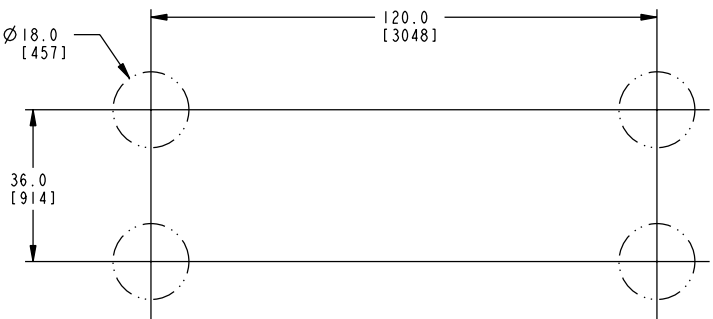
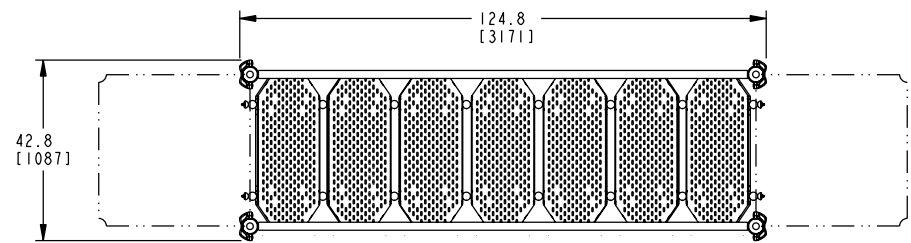
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

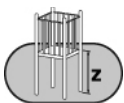
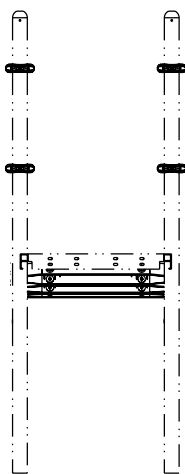
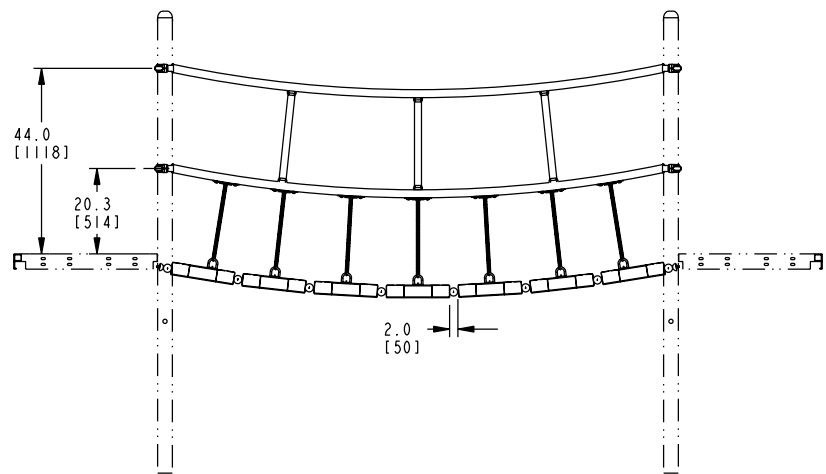
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Footing Diagram



Equal to the height of the deck.

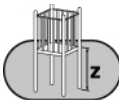
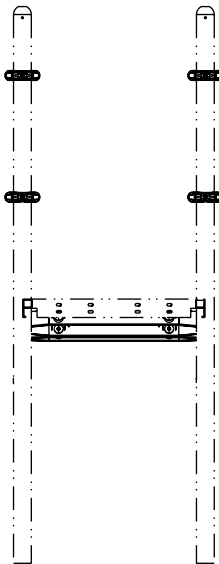
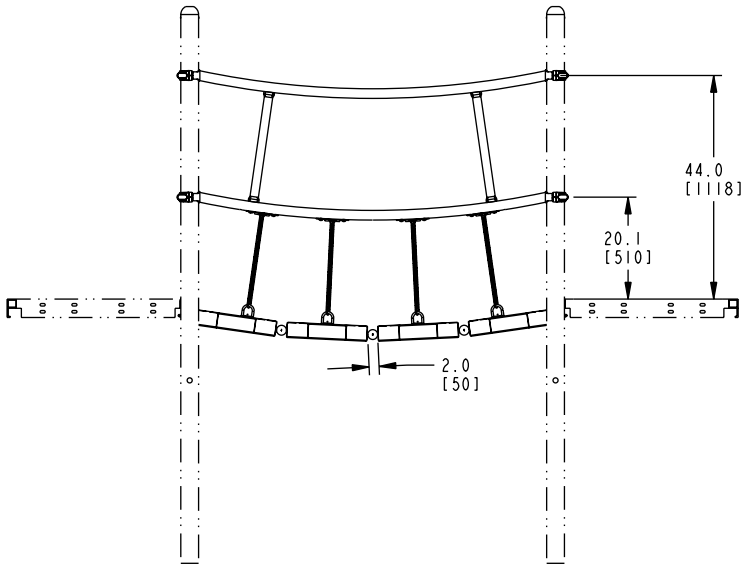
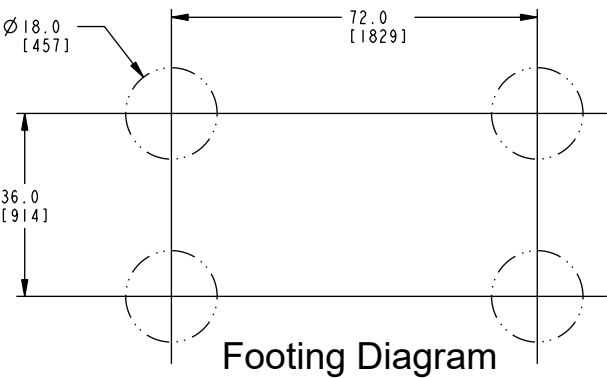
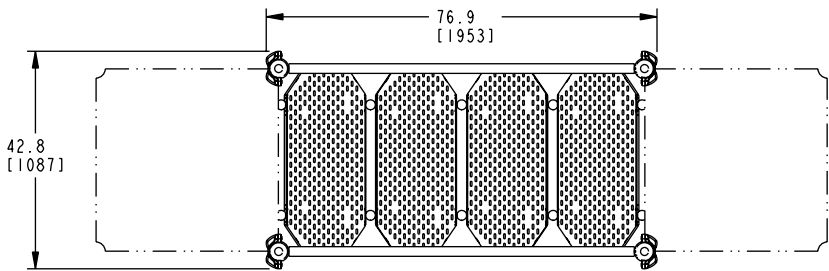
Elevation Views
CH6596



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



Equal to the height of the deck.

Elevation Views
CH6597



Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.

Narrow Band Clamp
AAU0027

Bridge Guardrail
(See Table)

3/8" Flat Washer
BAE0595

3/8" x 1-1/4"
Tamper Resistant Bolt
BAE0662



Detail A
Step 3

Model	Guardrail Part No.	Plank Part No.	No. of Planks
ZZCH6596	AEN0441	BPM0282	7
ZZCH6597	AEN0291	BPM0285	4

**This side of the plank
faces the deck.**

ISO 43 Chain
ACN0069

Bridge Plank
(See Table)

1" O.D. Flat Washer
BAE0600

3/8" Lock Nut
BAE0620

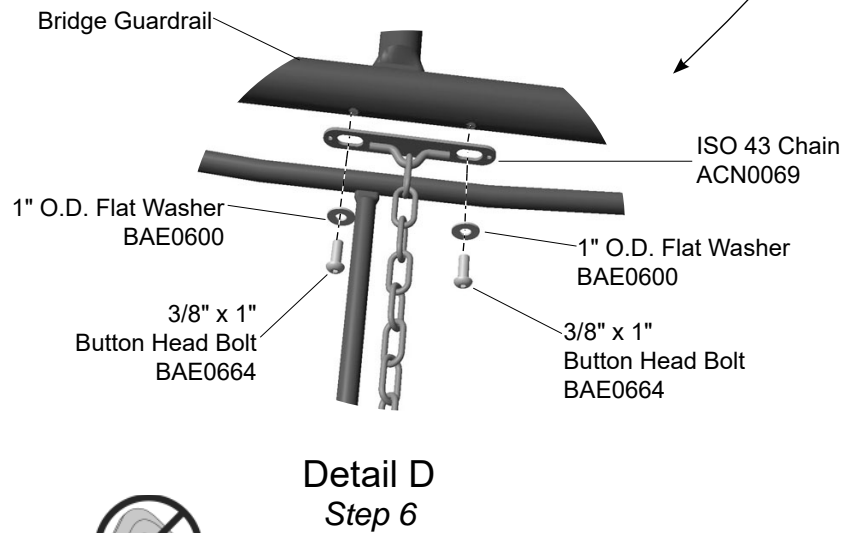
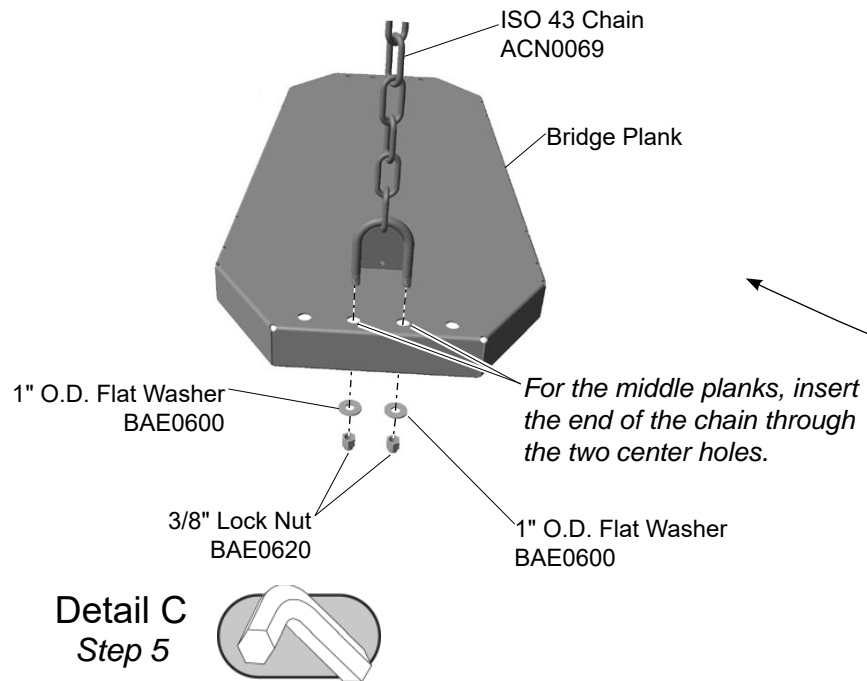
For the planks attached to decks,
insert the end of the chain through
the two inside holes.

1" O.D. Flat Washer
BAE0600

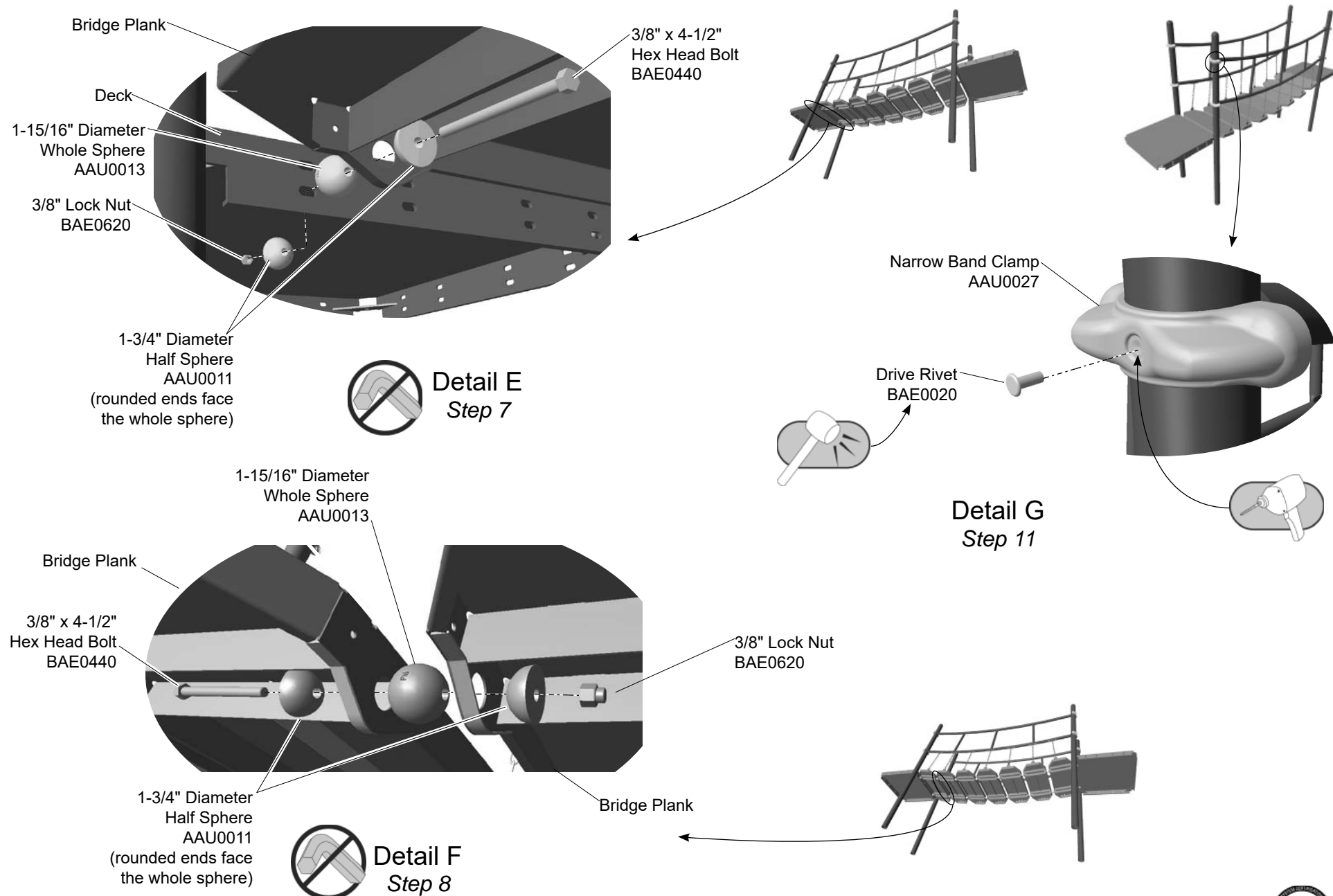
Detail B
Step 4



Installation Instructions



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Attach the guardrails to the support posts.

Step 3: Attach guardrails to support posts. See **Detail A**. Select both guardrails, (8) eight narrow band clamps, and the appropriate hardware. There are (16) sixteen connections. Place each guardrail between the support posts with curve in the rails pointing downward and at the height specified in the corresponding model **Elevation View**. Attach each band clamp to a guardrail band as shown.

Note: This step will require 2 to 3 people. One or two people need to support the guardrails while the remaining person makes hardware connections.

Assemble the bridge planks.

Note: The next (2) two steps should be accomplished on the ground for ease of assembly. For each model, the (2) two planks that will be attached to the decks will have a chain attached through the *inside* holes toward the middle planks while the remaining planks will have the chains attached to the *center* holes.

Step 4: Attach the suspension chains to the inside holes on (2) two bridge planks. See **Detail B**. Select (2) two bridge planks, (4) four chains with looped and f at ends, and the appropriate hardware. There are (4) four connections per plank. Insert the u-bolt (loop) on the end of a chain through the two *inside* holes at each end of the plank and attach as shown. Repeat this procedure for the remaining plank. These two planks will be utilized as the **end** planks on the bridge.

Attach the chains to the remaining bridge planks.

Step 5: Attach the chains to the remaining bridge planks. See **Detail C**. Select the remaining bridge planks, (2) two suspension chains for *each* plank, and the appropriate hardware. There are (4) four connections per plank. Insert the u-bolt (loop) on the end of a chain through the *center* two holes on each end of a plank and attach as shown. Repeat this procedure for the remaining plank(s).

Attach the bridge planks to the bridge guardrails.

- Orient the planks under the guardrails.
- Position each **end** plank near an adjoining platform with the chain mounting loops **towards the center planks**.
- This step will require 2 to 3 people. One or two people need to support the bridge planks while the remaining person makes hardware connections.

Step 6: Attach the chains to the guardrails. See **Detail D**. Select the plank assemblies and the appropriate hardware. There are (4) four connections per plank. Select a plank and align the holes of the f at ends of the suspension chains with the holes on the underside of the bottom guardrails. Attach as shown. Repeat this process for each remaining plank.

Attach an end plank to a deck.

Step 7: Attach an end plank to a deck. See **Detail E**. Select (2) two of the following: 1-3/4" diameter whole spheres, 3/8" x 4-1/4" hex head bolts and 3/8" lock nuts. Also select (4) of the following: 1-3/4" diameter half spheres. Center the bridge plank against a deck and attach as shown.

Attach the middle plank to the end plank.

Step 8: Attach the middle plank to the end plank. See **Detail F**. Select (2) two of the following: 1-3/4" diameter whole spheres, 3/8" x 4-1/4" hex head bolts and 3/8" lock nuts. Select (4) of the following: 1-3/4" diameter half spheres. Attach the middle plank to the end plank as shown.

Step 9: Repeat **Steps 7 and 8** to complete bridge assembly. Attach remaining planks together and to the deck as described in previous steps.

Installation Instructions

Final Details.

__Step 10: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 11: Install drive rivets. See **Detail G**. After the structure assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, pound the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH6596 - 120 in. (3048 mm) ADVENTURE BRIDGE

PART NO.	DESCRIPTION	QTY.
AAU0011	SPACER - 1-3/4" DIA. HALF SPHERE w/HOLE THRU MID.	32
AAU0013	SPACER - 1-15/16" DIA. SPHERE w/HOLE THRU MID.	16
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	8
ACN0069	CHAIN - 20.50" ISO43 w/BRACKETS	14
AEN0441	GUARDRAIL - 6.31" x 31.82" x 119.75" w/3-1/2" CLAMPS	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0440	BOLT - 3/8"-16 x 4-1/2" HEX HEAD	16
BAE0595	WASHER - 3/8" SAE FLAT	16
BAE0600	WASHER - 1" O.D. FLAT	56
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	44
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRV	16
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	28
BPM0282	PLANK - 37.75" x 15.00" x 3.00"	7

CH6597 - 72 in. (1829 mm) ADVENTURE BRIDGE

PART NO.	DESCRIPTION	QTY.
AAU0011	SPACER - 1-3/4" DIA. HALF SPHERE w/HOLE THRU MID.	20
AAU0013	SPACER - 1-15/16" DIA. SPHERE w/HOLE THRU MID.	10
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	8
ACN0069	CHAIN - 20.50" ISO43 w/BRACKETS	8
AEN0291	GUARDRAIL - 71.75" x 29.38" x 6.31"	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0440	BOLT - 3/8"-16 x 4-1/2" HEX HEAD	10
BAE0595	WASHER - 3/8" SAE FLAT	16
BAE0600	WASHER - 1" O.D. FLAT	32
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	26
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRV	16
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	16
BPM0285	PLANK - 37.75" x 15.82" x 3.00"	4

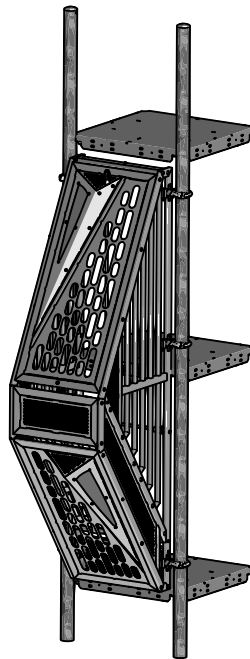


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Installation Instructions

Challengers® Model CH6730 KaleidoClimber




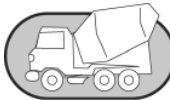


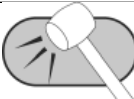


Assembly View

Installation Preparation

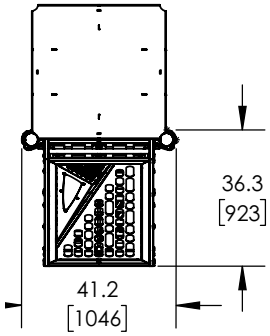
Recommended Crew: Two (2) adults
 Installation Time: 2 man-hours
 Use Zone: Refer to Master Layout Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

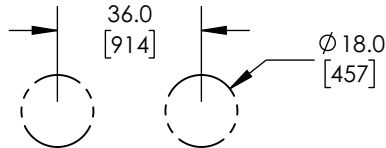
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

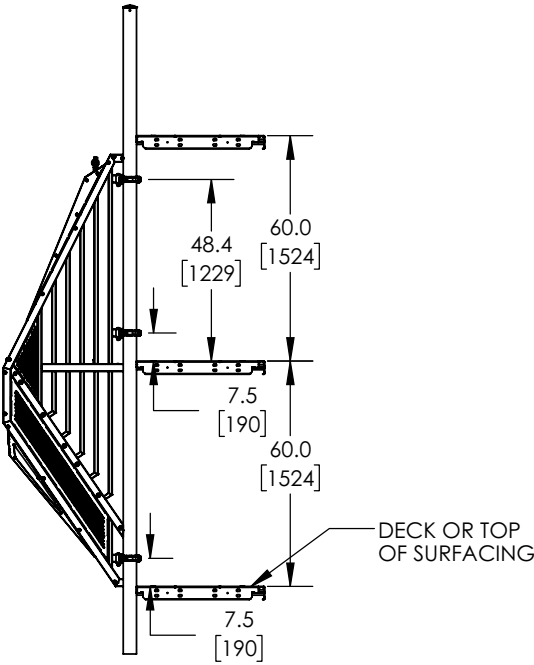
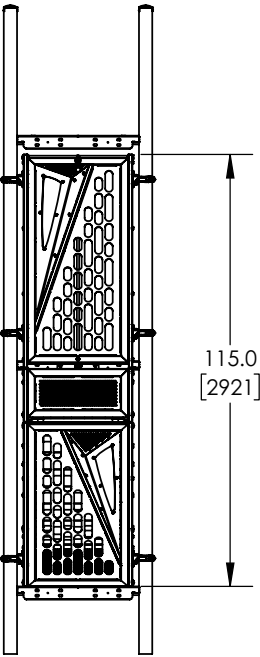
Top View



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram

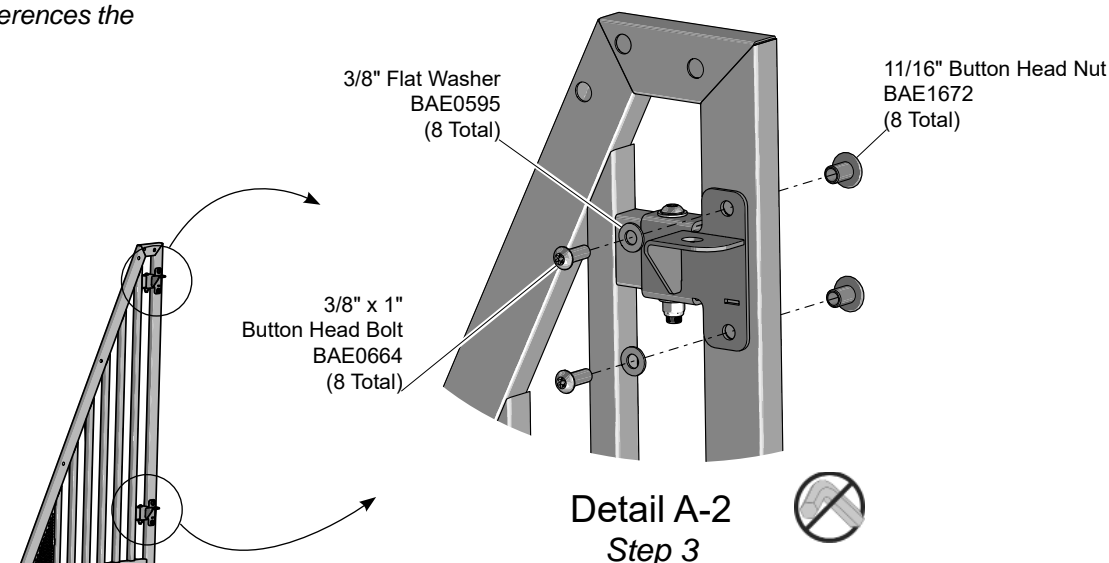
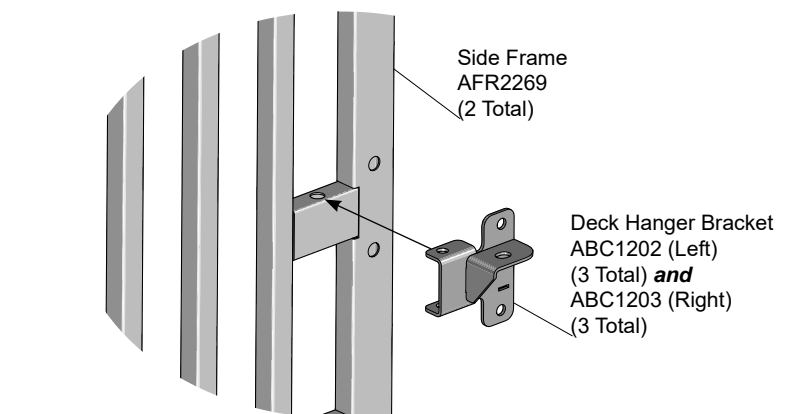


Elevation Views

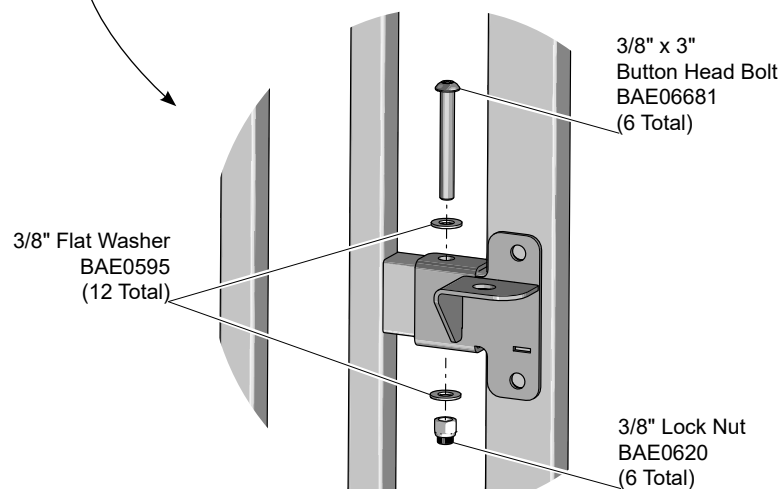


Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 16.

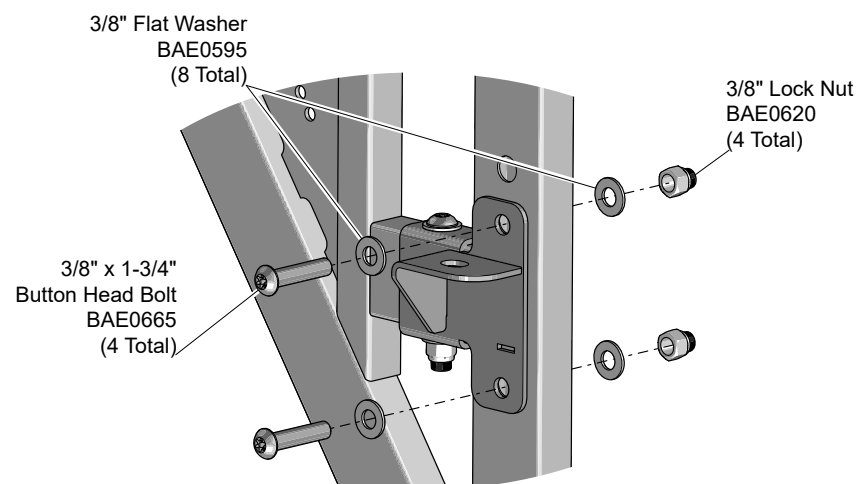


(Top and Middle Brackets)
Attach the brackets to the outside of the side frames.



Detail A-1
Step 3

Attach the brackets to the outside of the side frames.

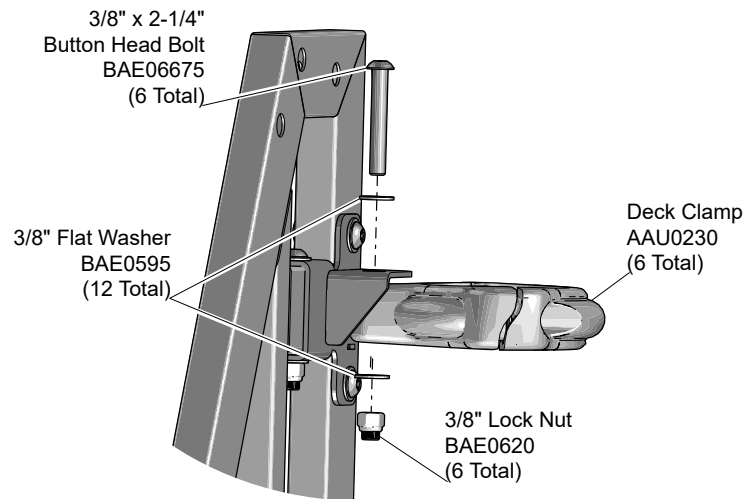


Detail A-3
Step 3

(Bottom Brackets)

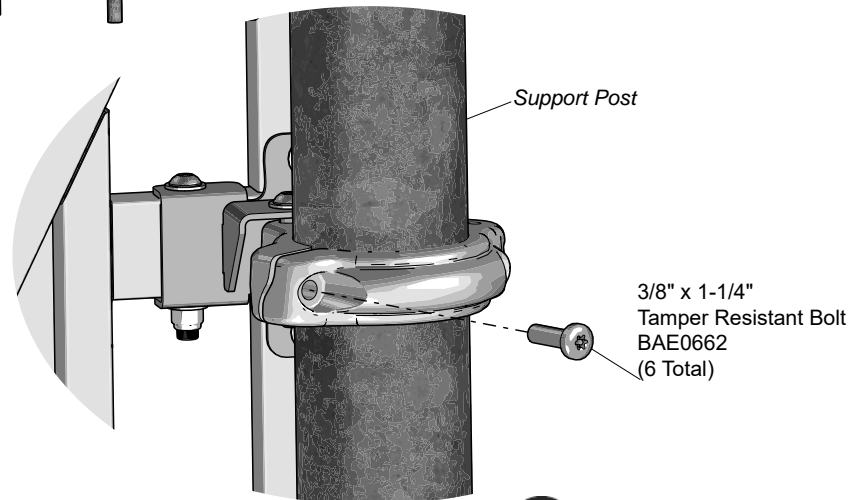
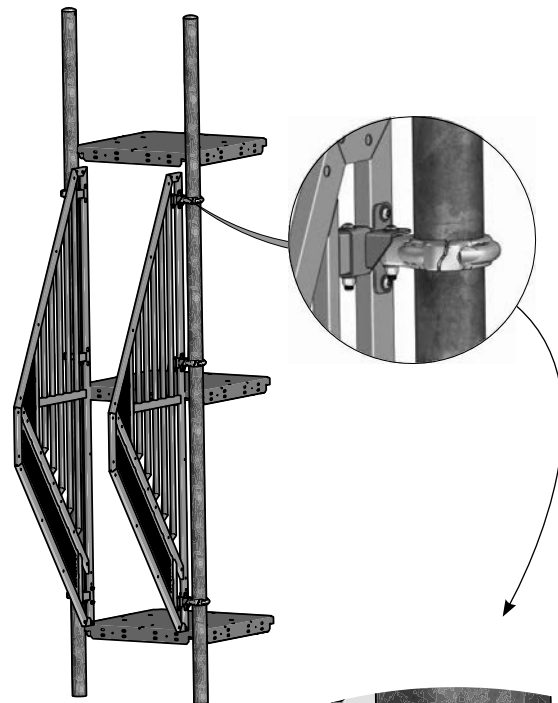
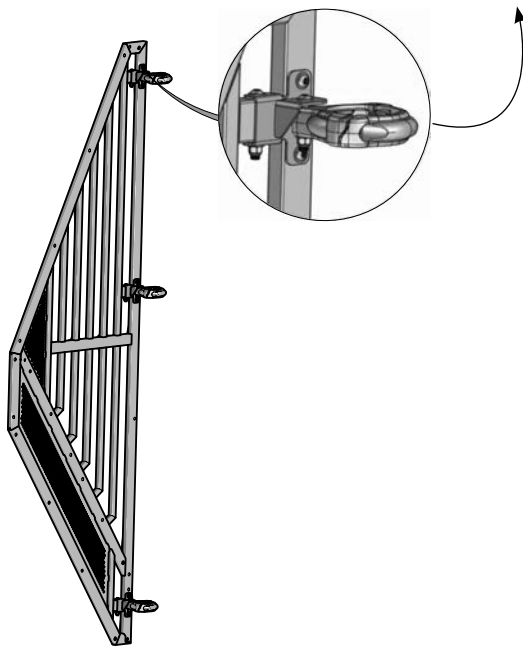
Attach the brackets to the outside of the side frames.

Installation Instructions



Detail B Step 4

Attach the clamps to the deck hanger brackets.

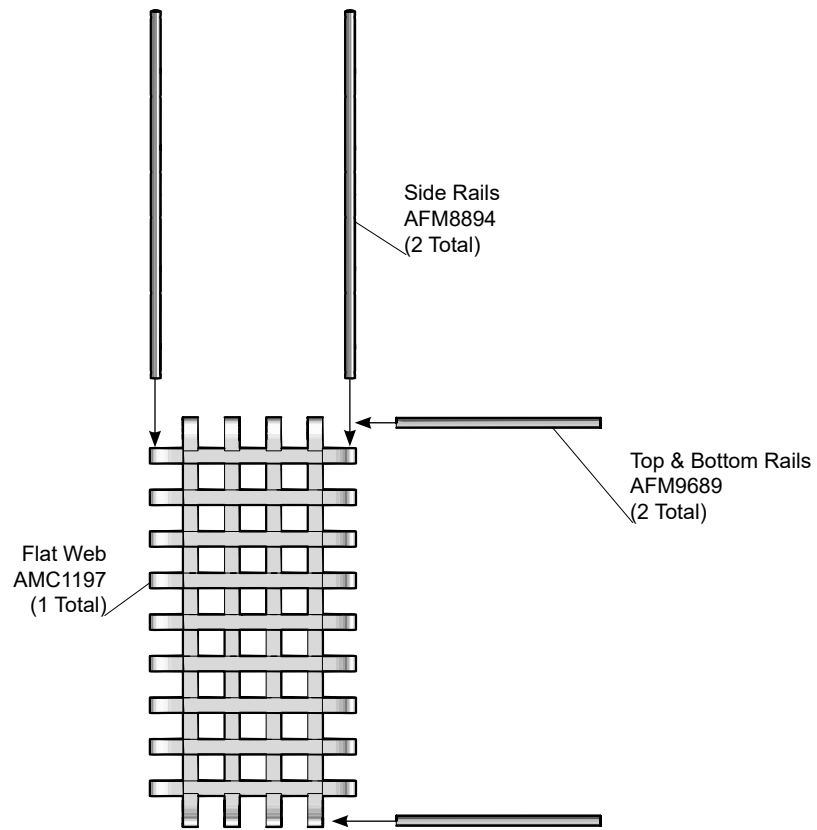


Detail C Step 5

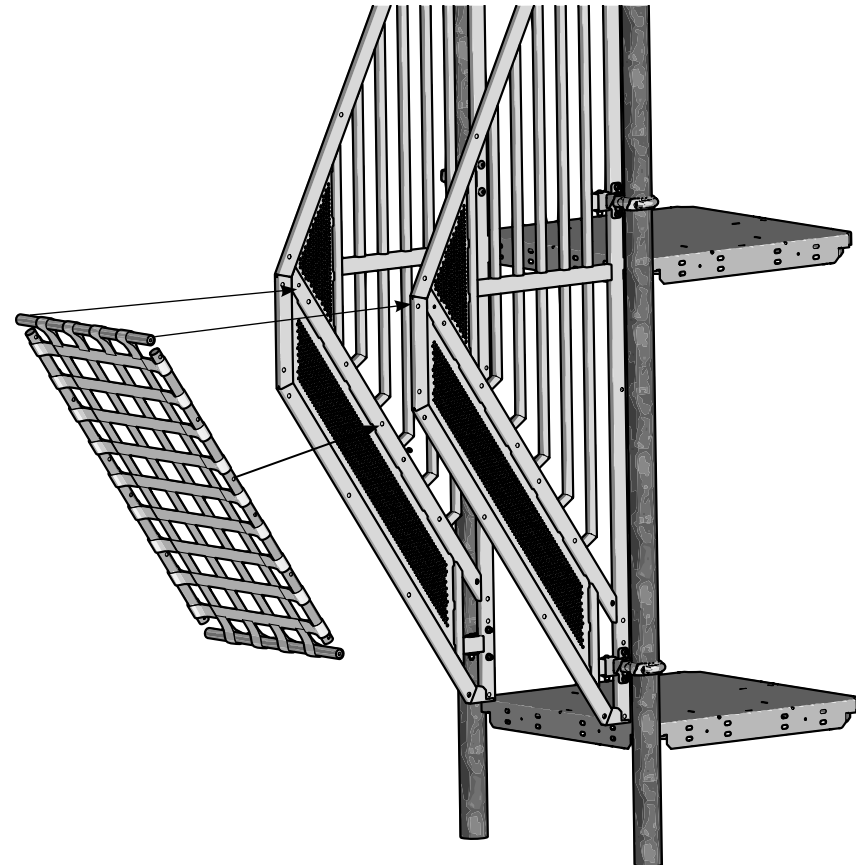


Attach the clamps to the support posts.

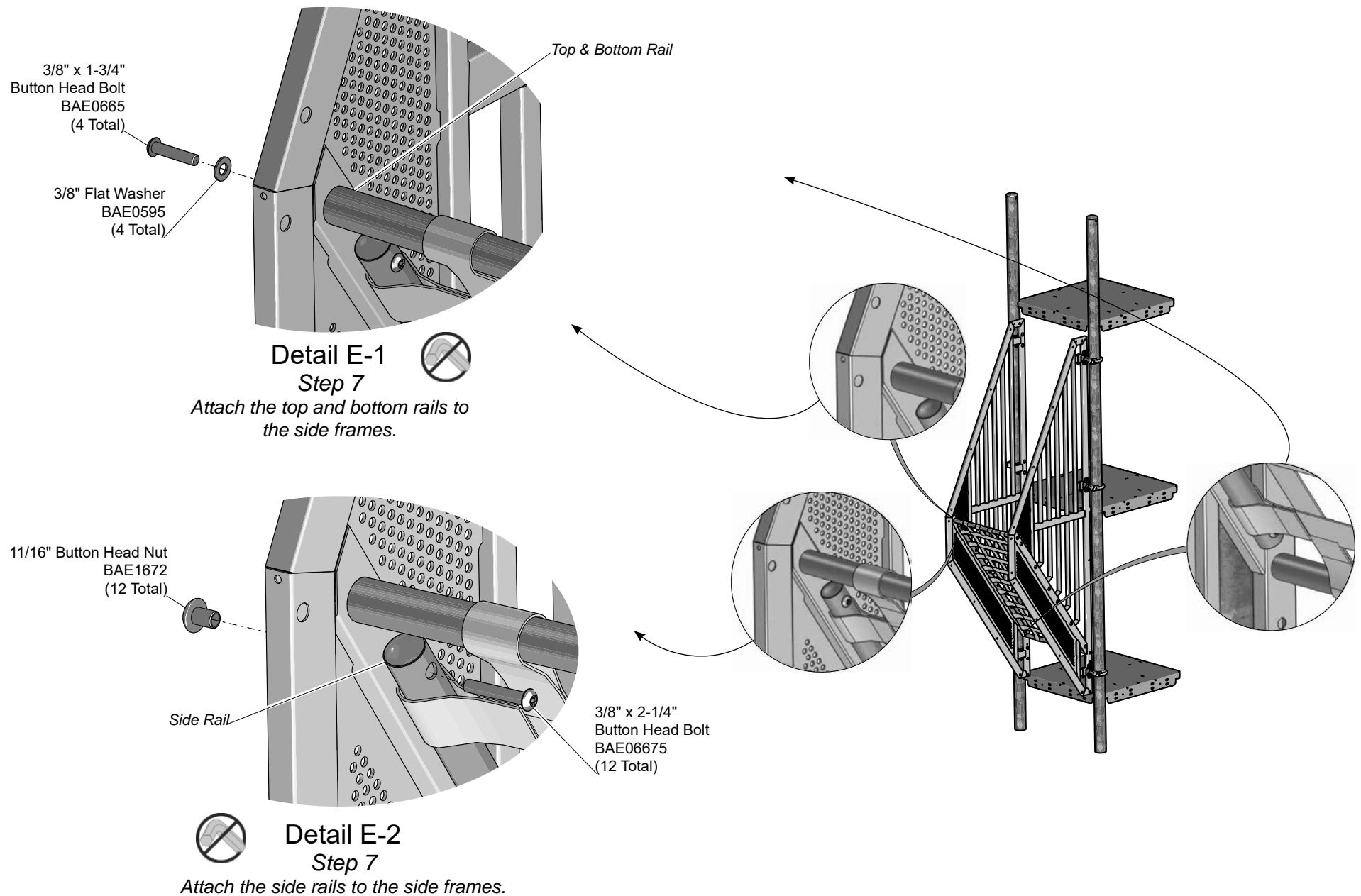
Installation Instructions



Detail D
Step 6
Assemble the flat web.



Installation Instructions



Installation Instructions

11/16" Button Head Nut
BAE1672
(4 Total)

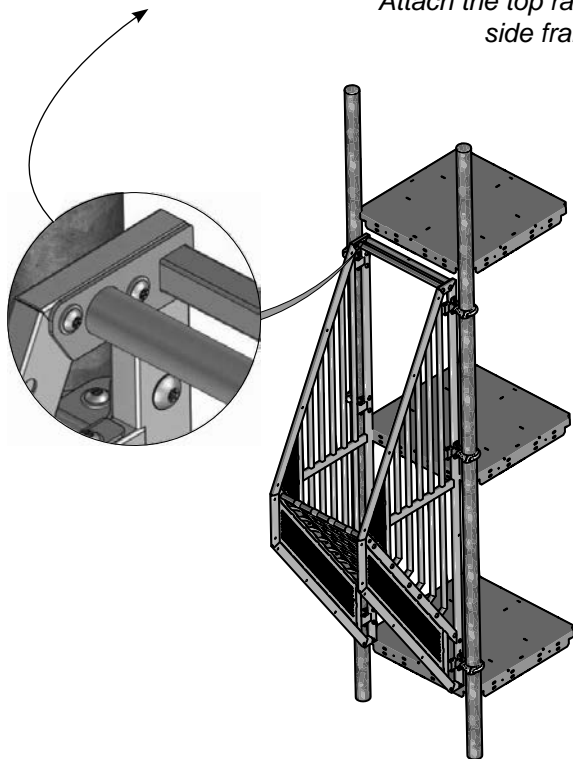
3/8" Flat Washer
BAE0595
(4 Total)

3/8" x 1"
Button Head Bolt
BAE0664
(4 Total)

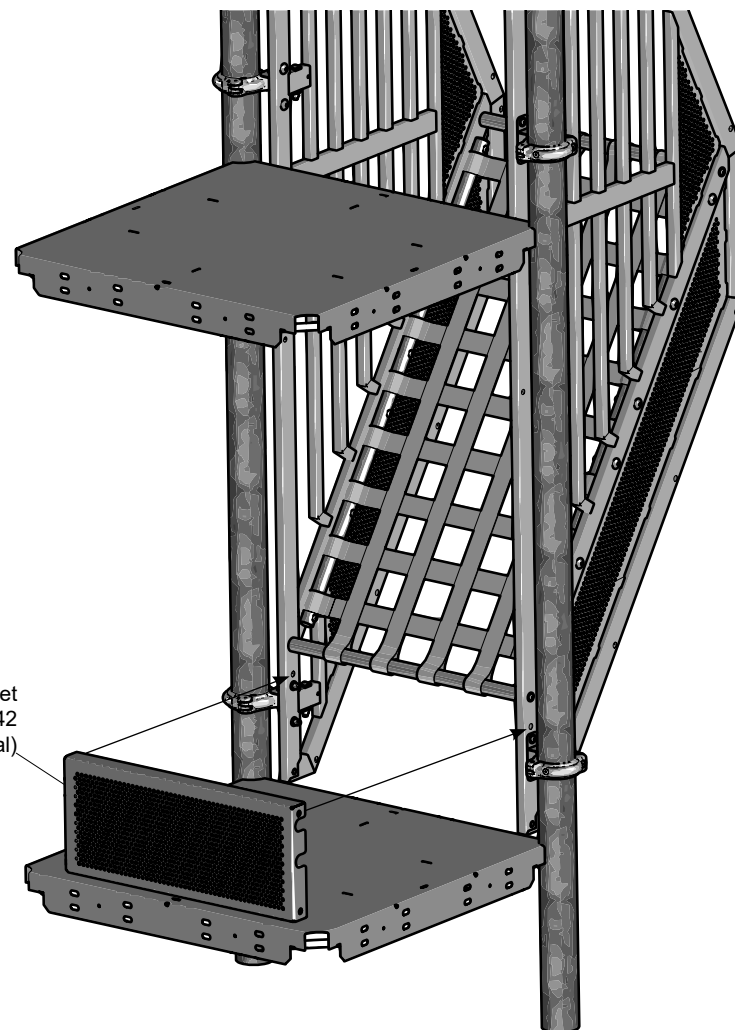
Top Rail Frame
AFR2544
(1 Total)

Detail F Step 8

Attach the top rail frame to the
side frames.



Bottom Bracket
APL3442
(1 Total)



Installation Instructions

3/8" x 1-3/4"
Button Head Bolt
BAE0665
(4 Total)

3/8" Flat Washer
BAE0595
(8 Total)

3/8" Lock Nut
BAE0620
(4 Total)

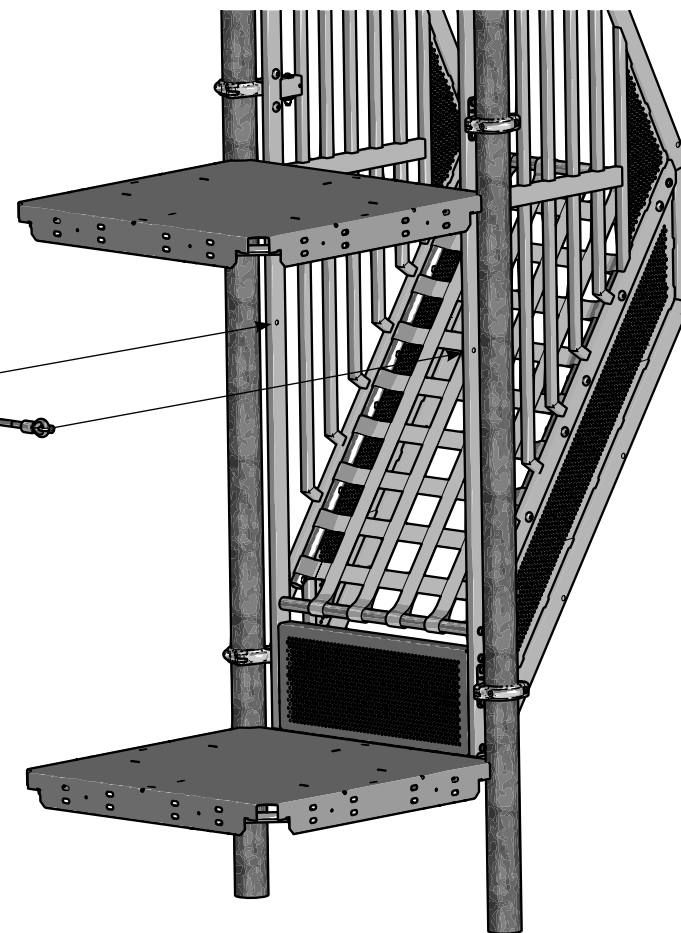
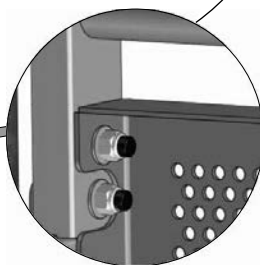
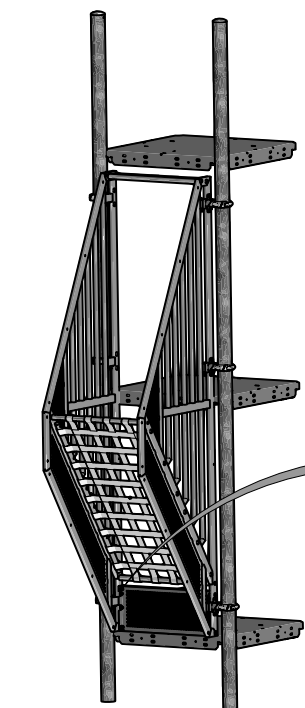
Note: The side frame is shown transparent for ease of viewing the connection.

Detail G

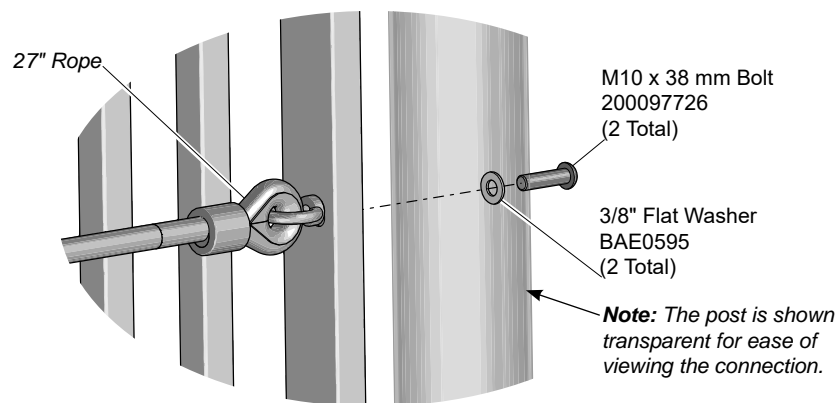
Step 9

Attach the bottom bracket to the side frames.

27" Rope
AMC1198
(1 Total)

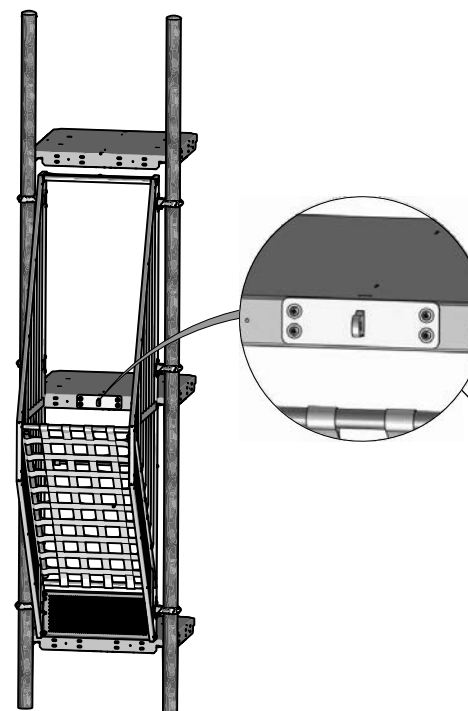
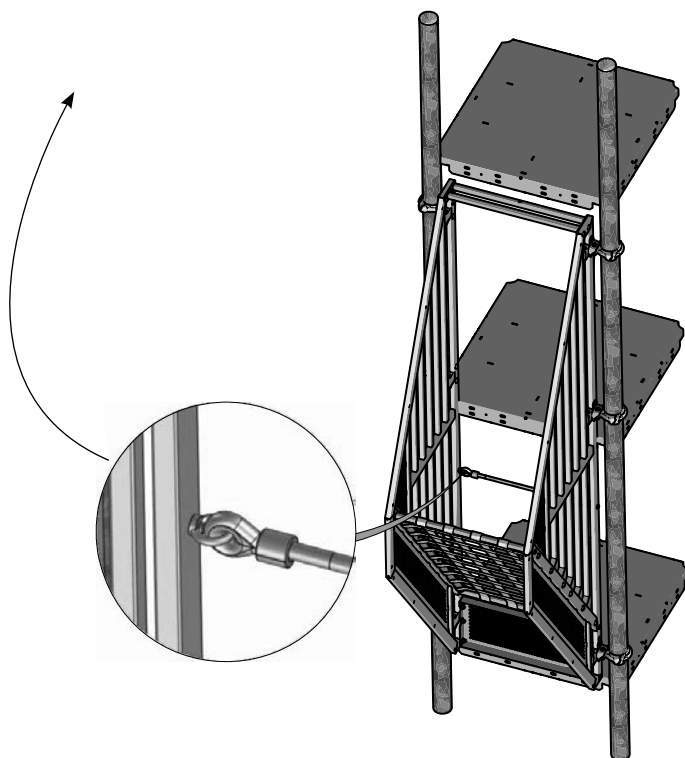


Installation Instructions



Detail H Step 10

Attach the 27 in. rope to the side frames.



Rope Deck Bracket
AFR2557
(1 Total)

3/8" x 1-1/4"
Button Head Bolt
BAE0666
(4 Total)

1" O.D. Flat Washer
BAE0600
(8 Total)

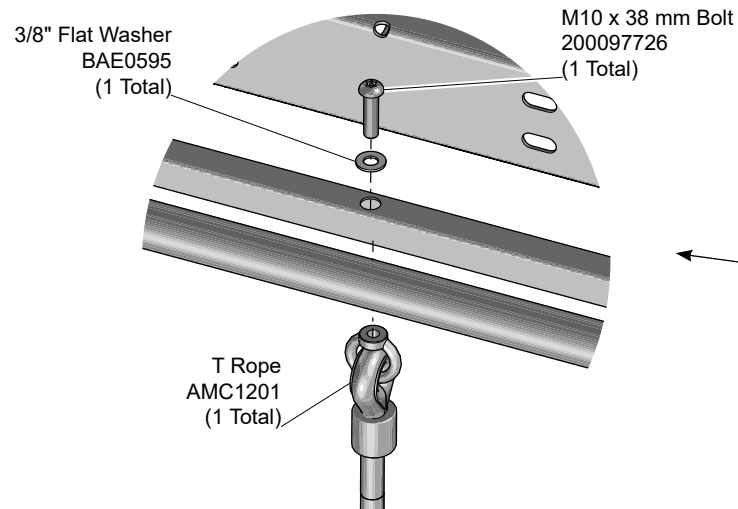
3/8" Lock Nut
BAE0620
(4 Total)

Detail J Step 11

Attach the rope deck bracket to the middle deck.



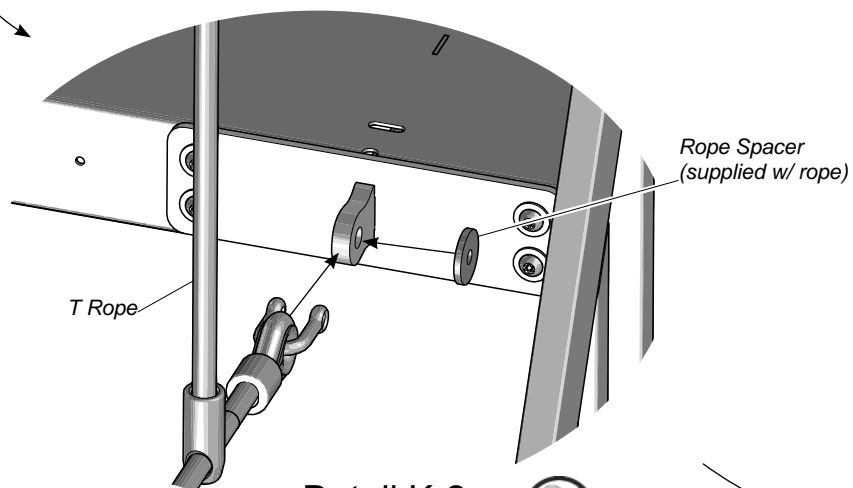
Installation Instructions



Detail K-1

Step 12

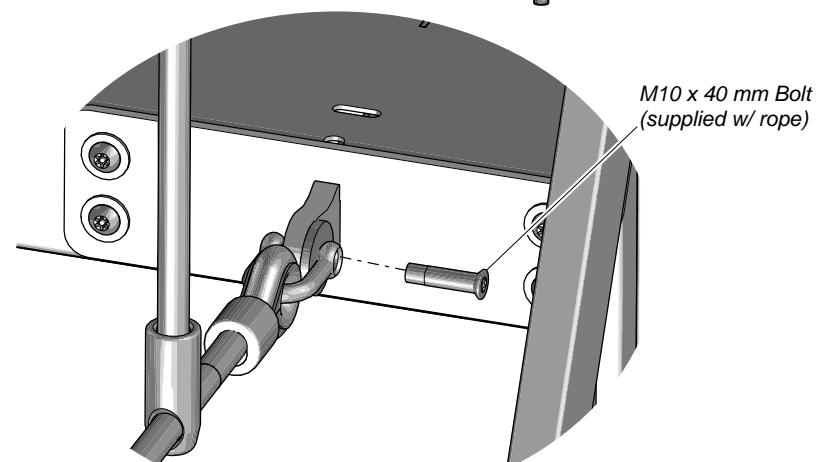
Attach the T Rope to the top rail frame.



Detail K-2

Step 12

Attach the T Rope to the rope deck bracket.



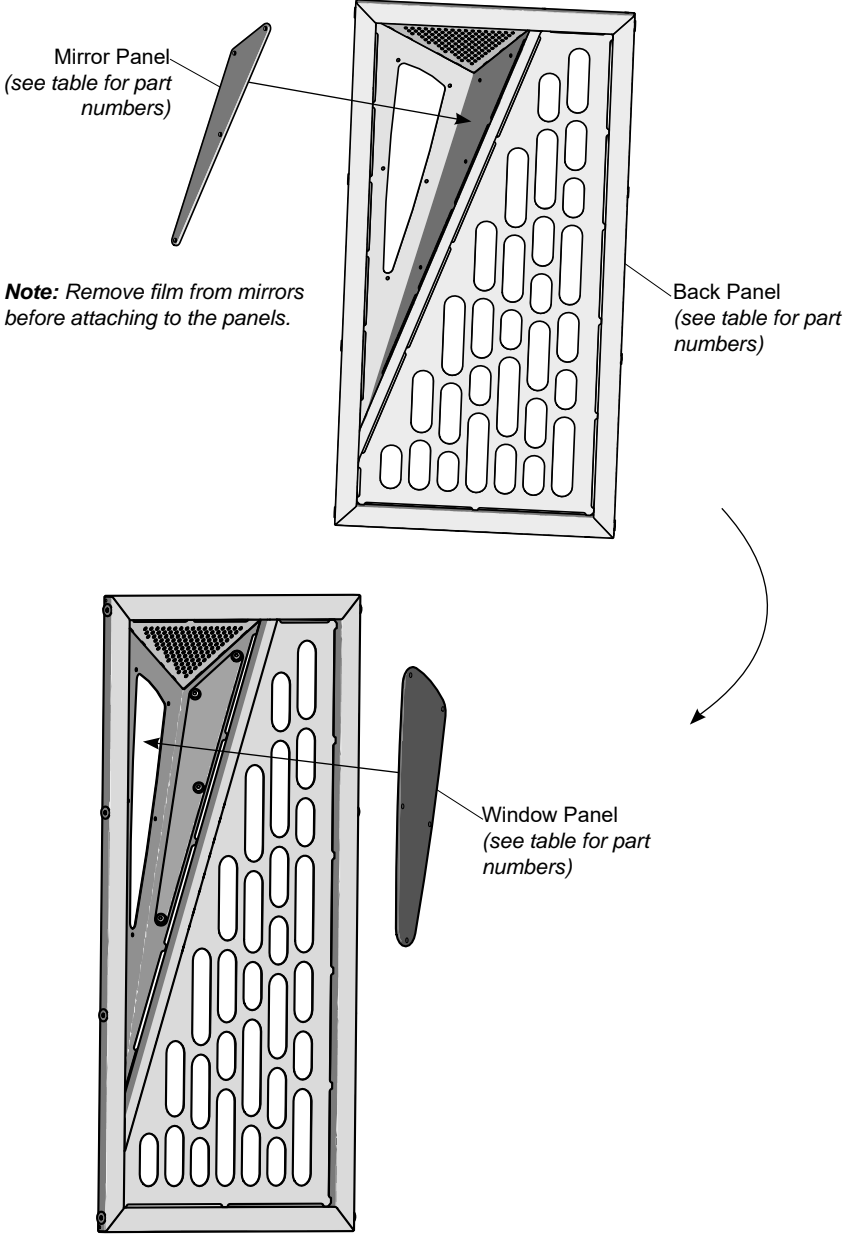
Detail K-2

Step 12

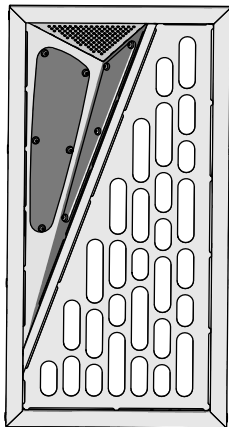
Attach the T Rope to the rope deck bracket.



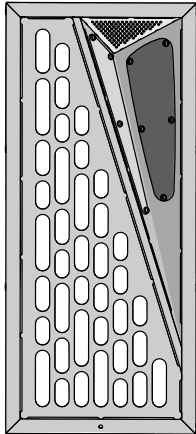
Installation Instructions



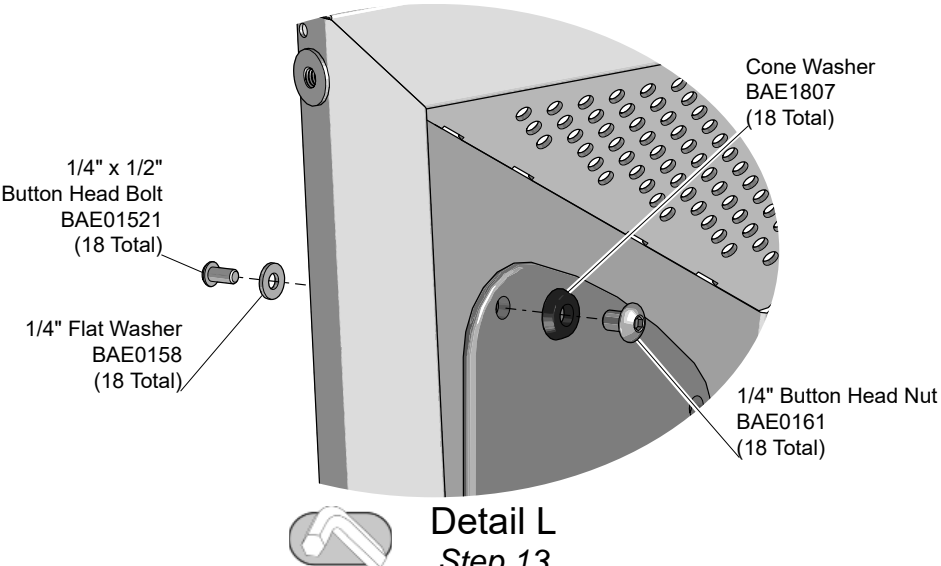
Bottom Back Panel



Top Back Panel



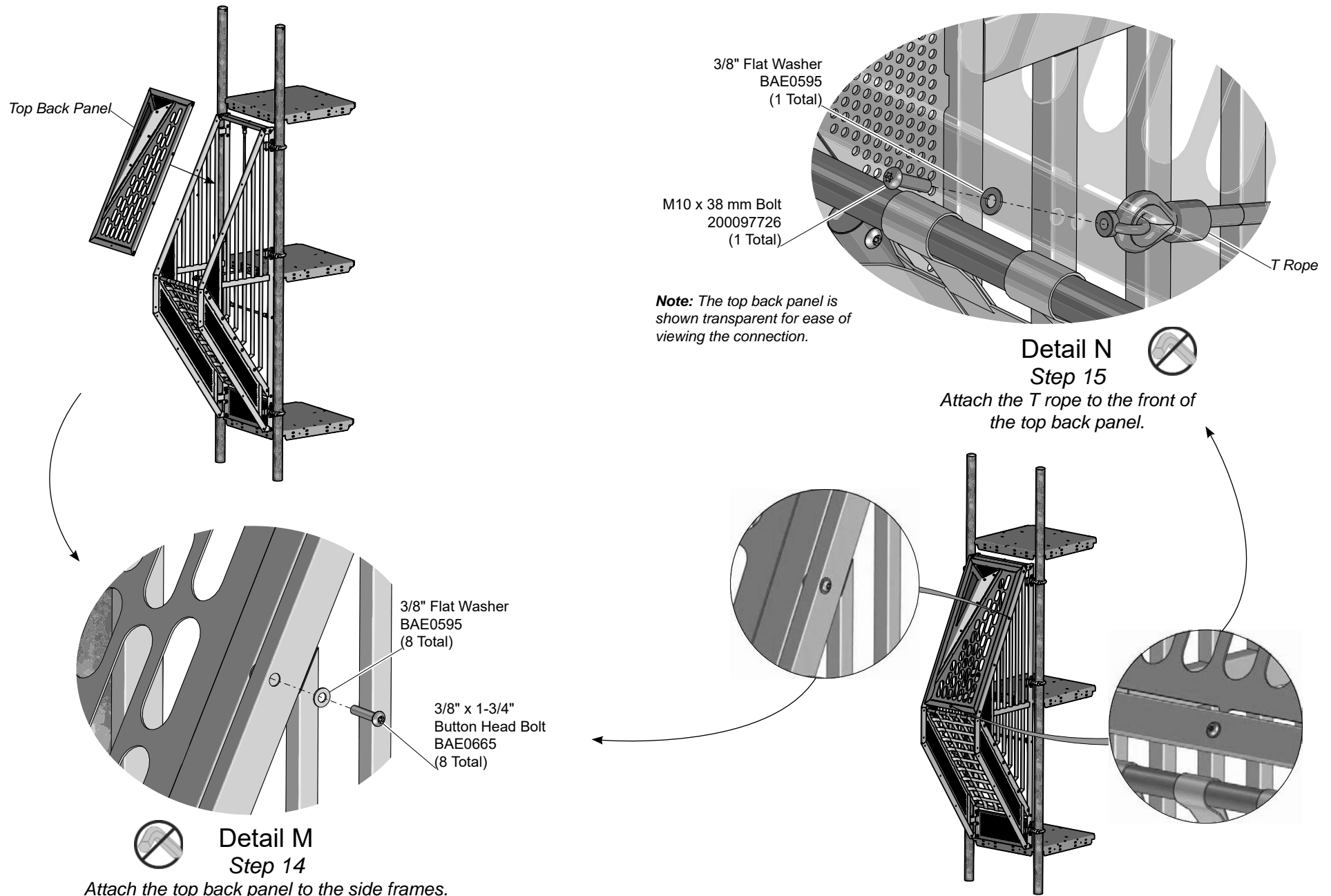
Back Panel Part Number	Window Panel Part Number	Mirror Panel Part Number	Quantity
AFR2546 (Top)	BFC4263	BFC4264	1
AFR2547 (Bottom)	BFC4263	BFC4265	1



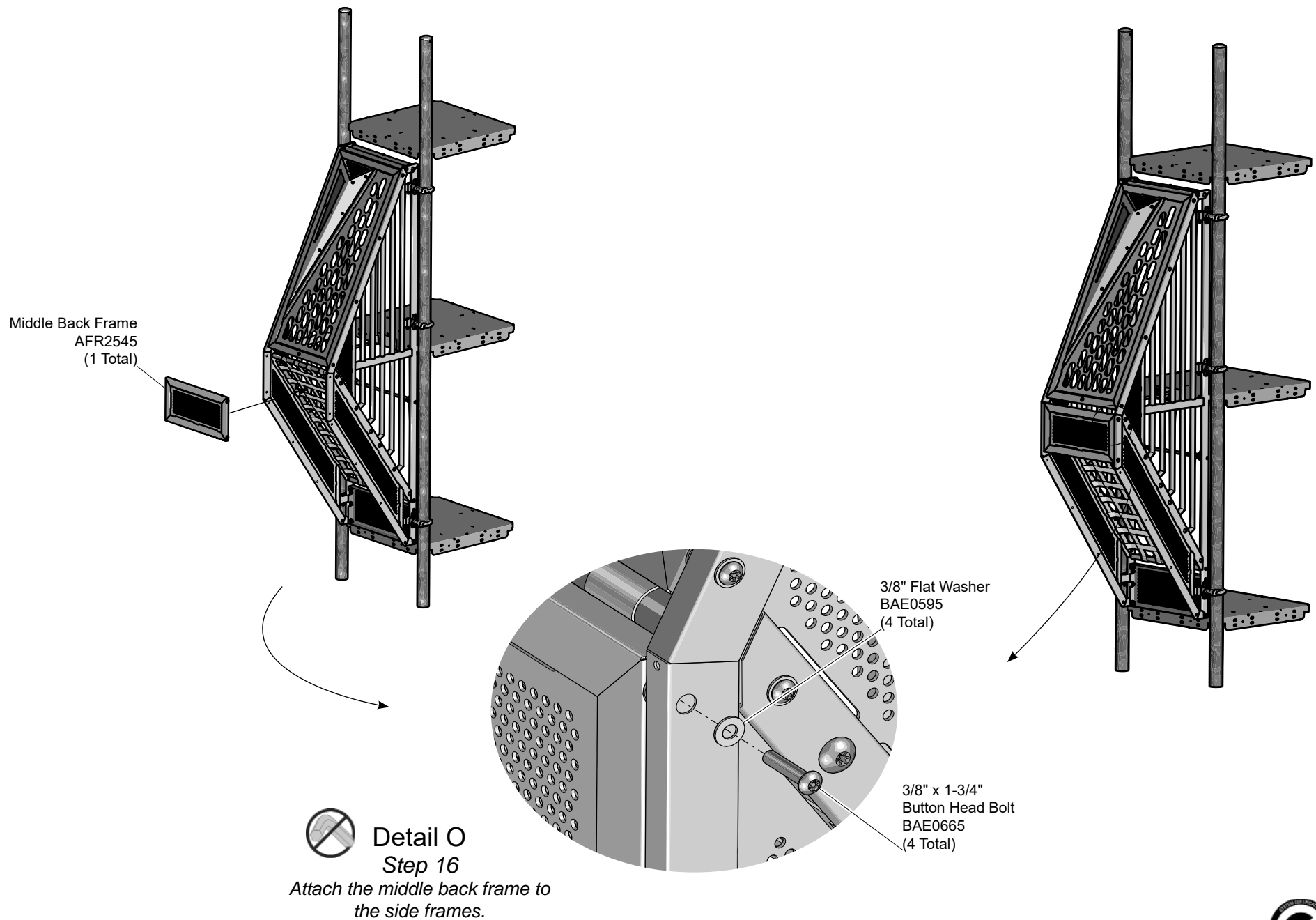
Attach the mirror and window panels to the back panels.



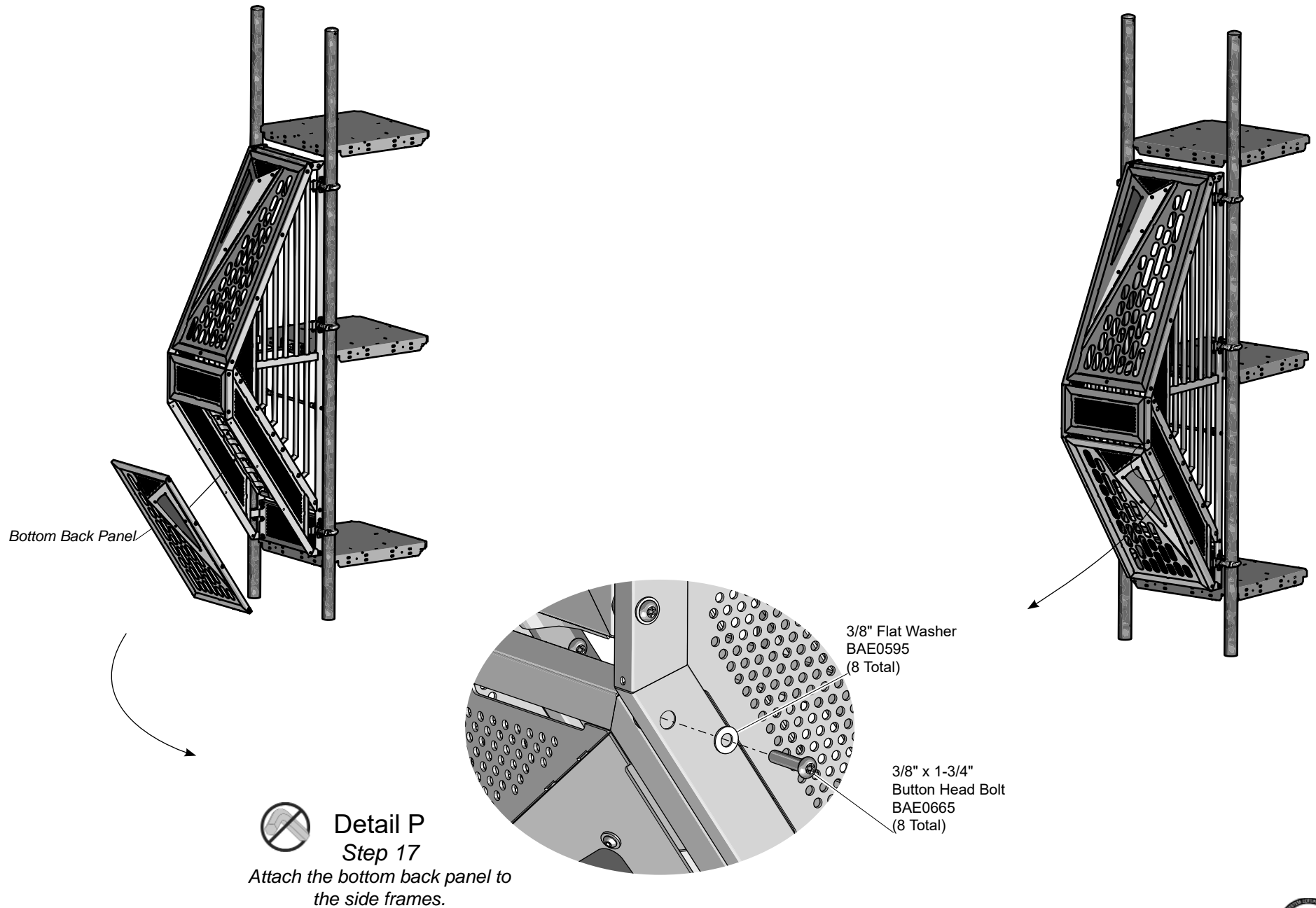
Installation Instructions



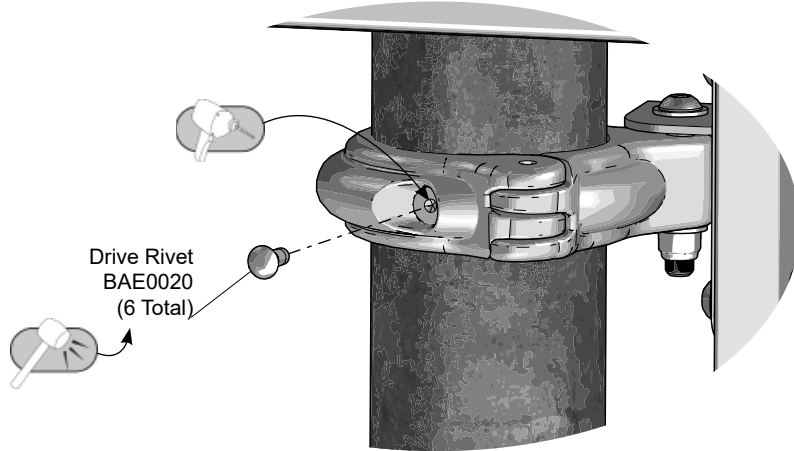
Installation Instructions



Installation Instructions

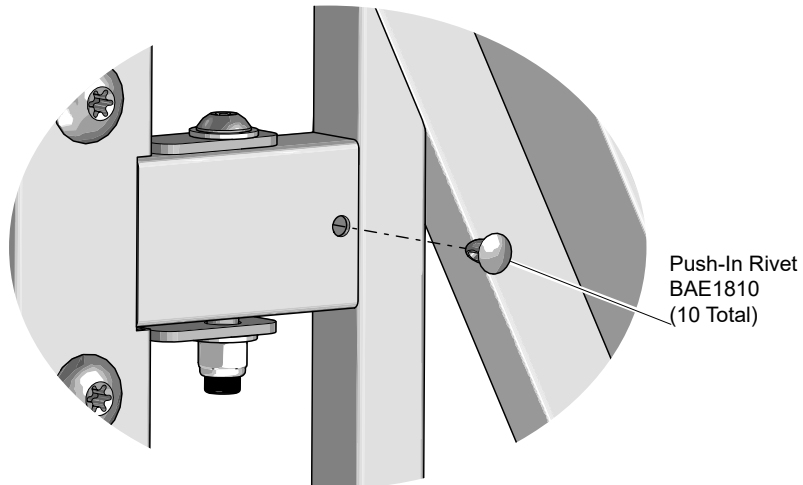


Installation Instructions



Detail Q
Step 19

Secure the clamps to the support posts.



Detail R
Step 20

Fill in open holes.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the brackets to the outside of the side frames. See **Details A-1, A-2 and A-3**. Position the left and right brackets against the side frames and attach as shown.

Step 4: Attach the clamps to the deck hanger brackets. See **Detail B**. Place the clamp under the deck hanger bracket, and attach as shown.

Step 5: Attach the clamps to the support posts. See **Detail C**. With adequate manpower, lift the side frames into position, close the clamps around the support posts, and attach as shown. Refer to Elevation View for correct placement height.

Step 6: Assemble the f at web. See **Detail D**. Place the side rails and top and bottom rails through the f at web as shown.

Step 7: Attach the f at web to the side frames. See **Details E-1 and E-2**. Position the f at web between the side frames, and attach as shown.

Step 8: Attach the top rail frame to the side frames. See **Detail F**. Position the top rail frame between the top of the side frames, align the holes, and attach as shown.

Step 9: Attach the bottom bracket to the side frames. See **Detail G**. Position the bottom bracket between the bottom of the side frames, and attach as shown.

Step 10: Attach the 27 inch rope to the side frames. See **Detail H**. Place the rope between the side frames, and attach as shown.

Step 11: Attach the rope deck bracket to the middle deck. See **Detail J**. Place the rope deck bracket against the middle holes in the deck, and attach as shown.

Step 12: Attach the T Rope to the assembly. See **Details K-1 and K-2**. Attach the rope to the top rail frame as shown and attach to the rope deck bracket as shown.

Note: The other end of the rope will be attached to a panel in Step 15.

Step 13: Attach the mirror and window panels to the back panels. See **Detail L**. Position the mirror and window panels against the inside of the back panels, and attach as shown.

Step 14: Attach the top back panel to the side frames. See **Detail M**. Position the top back panel between the top of the side frames, and attach as shown.

Note: The side of the panel with the mirror and window panels should face inside towards the decks.

Step 15: Attach the T Rope to the front of the top back panel. See **Detail N**. Align the rope with the hole on the panel, and attach as shown.

Step 16: Attach the middle back frame to the side frames. See **Detail O**. Position the middle back frame between the middle of the side frames, and attach as shown.

Step 17: Attach the bottom back panel to the side frames. See **Detail P**. Position the bottom back panel between the bottom of the side frames, and attach as shown.

Note: The side of the panel with the mirror and window panels should face inside towards the decks.

Final Details.

Step 18: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 19: Install drive rivets. See **Detail Q**. After the equipment assembly is complete, install a drive rivet in each pipe clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 20: Fill in open holes. See **Detail R**. Push rivets into open holes on side frames.

CH6730 - KALEIDO CLIMBER

PART NO.	DESCRIPTION	QTY.
200097726	BOLT - M10 x 1.5 MALE 38mm	4
AAU0230	CLAMP - 3.50" DECK HANGER DIE CAST	6
ABC1202	BRACKET - 3.62" x 2.50" x 4.50" (LEFT)	3
ABC1203	BRACKET - 3.62" x 2.50" x 4.50" (RIGHT)	3
AFM8894	FAB METAL - 1.315" O.D. x 48.88" CAPPED	2
AFM9689	FAB METAL - 1.315" O.D. x 27.00" w/INSERTS	2
AFR2269	FRAME - 1.00" x 34.00" x 115.00"	2
AFR2544	FRAME - 27.00" x 5.25" x 2.00"	1
AFR2545	FRAME - 27.00" x 12.99" x 1.00"	1
AFR2546	FRAME - 61.00" x 27.00" x 4.34"	1
AFR2547	FRAME - 52.49" x 27.00" x 4.46"	1
AFR2557	FRAME - 11.00" x 3.50" x 2.31"	1
AMC1197	NET - FLAT WEB 54.22" x 27.00"	1
AMC1198	ROPE - 27.00"	1
AMC1201	ROPE - 16mm x 30.88" x 55.83"	1
APL3442	BRACKET - 1.88" x 11.25" x 27.00"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	6
BAE0158	WASHER - 1/4" SAE FLAT	18
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	18
BAE0595	WASHER - 3/8" SAE FLAT	80
BAE0600	1" O.D. X .437" I.D. STAINLESS STEEL FLAT WASHER	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	24
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	6
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	12
BAE0665	BOLT - 3/8"-16 x 1.75" BUTTON HEAD - SS	32
BAE0666	BOLT - 3/8"-16 x 1.25" BUTTON HEAD - SS	4
BAE01521	BOLT - 1/4"-20 x .50" BUTTON HEAD - SS	18
BAE1672	NUT - 3/8"-16 x 11/16" BUTTON HEAD	24
BAE1807	CONE WASHER - .89" O.D. x .39" I.D. x .20"	18
BAE1810	RIVET - PUSH IN WITH ARROW SHANK FOR .25 HOLE	10
BAE06675	BOLT - 3/8"-16 x 2.25" BUTTON HEAD - SS	18
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	6
BFC4263	COLOR POLYCARB - 22.59" x 7.57" x .25"	2
BFC4264	MIRROR - 26.61" x 3.26" x .25"	1
BFC4265	MIRROR - 23.85" x 3.94" x .25"	1



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Assembly View (representative model)

Installation Instructions

Challengers® Models CH6979 &
CH6986-CH6989


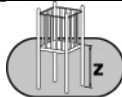

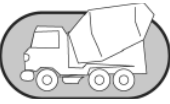
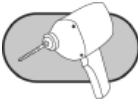


Inclined Cliff Hanger

48" (1219 mm), 60" (1524 mm),
72" (1829 mm), 84" (2134 mm)
& 96" (2438 mm) Deck Heights

Installation Preparation

Recommended Crew: Two (2) adults
Installation Time: 2 man-hours
Concrete Required: 0.06 cubic yard (0,05 cubic meters)
Use Zone: Refer to Master Drawing
User Group Age (years): 48"-60": ASTM/CSA: 2-12, EN: 2-14
..... 60"-96": ASTM/CSA: 5-12, EN: 6-14

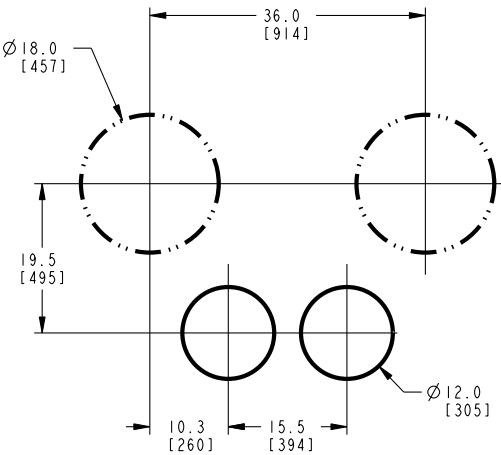
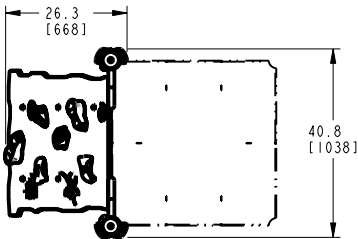
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

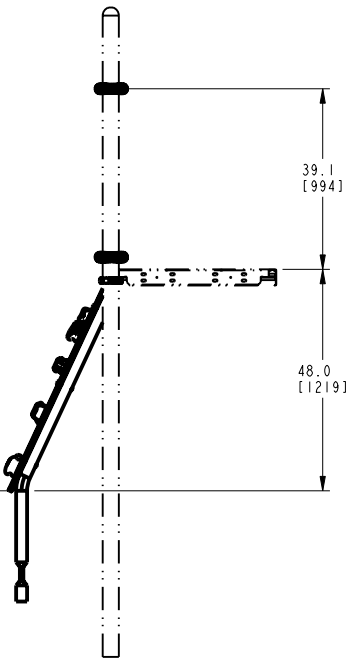
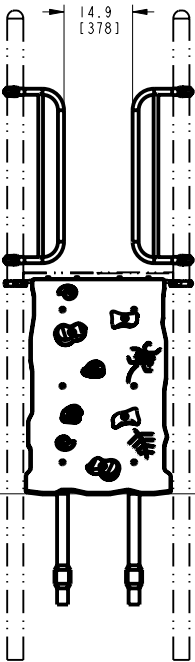
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

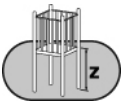
Top View



Footing Diagram



Elevation Views - CH6987 - 48" (1220 mm) Deck



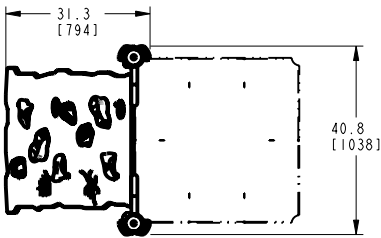
ASTM F1487: 48" (1219 mm)
 CSA-Z614: 1219 mm
 EN1176: 1219 mm



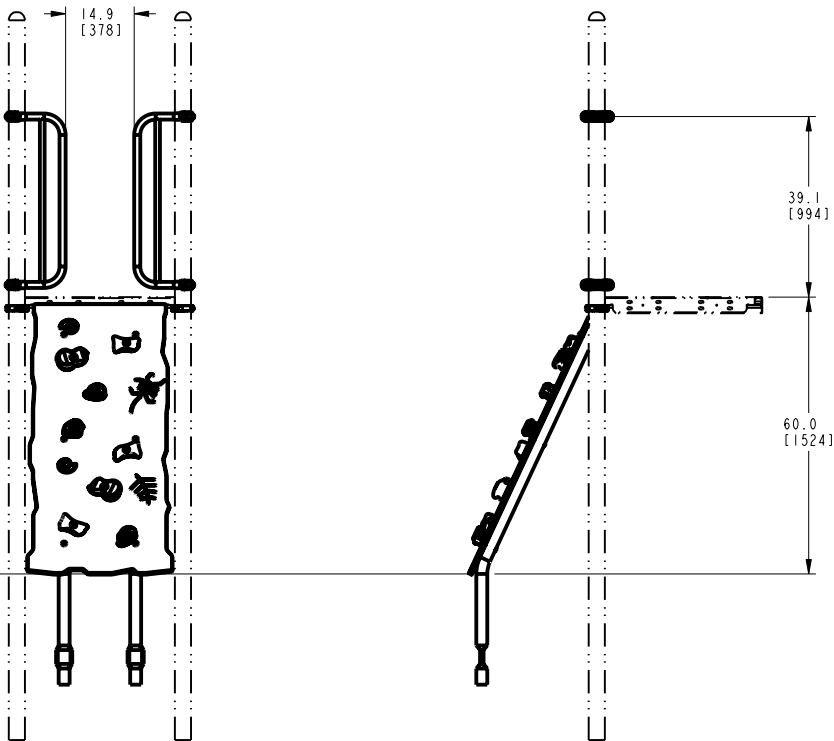
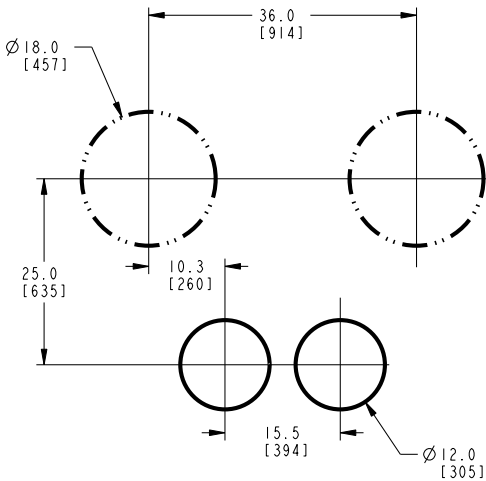
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

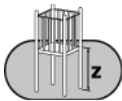
Top View



Footing Diagram



Elevation Views - CH6988 - 60" (1524 mm) Deck

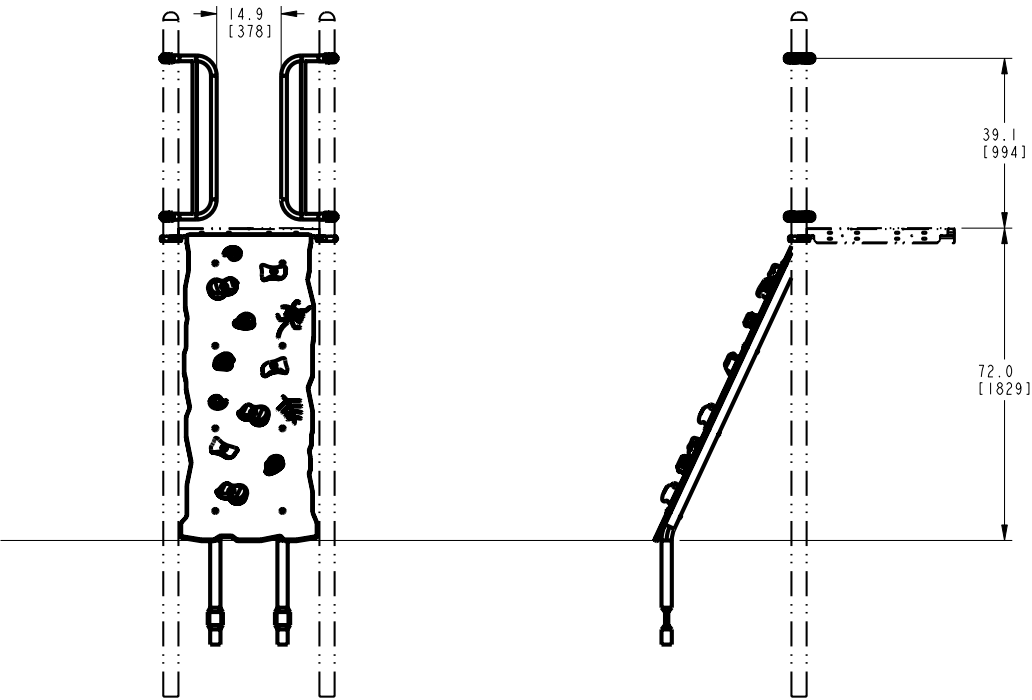
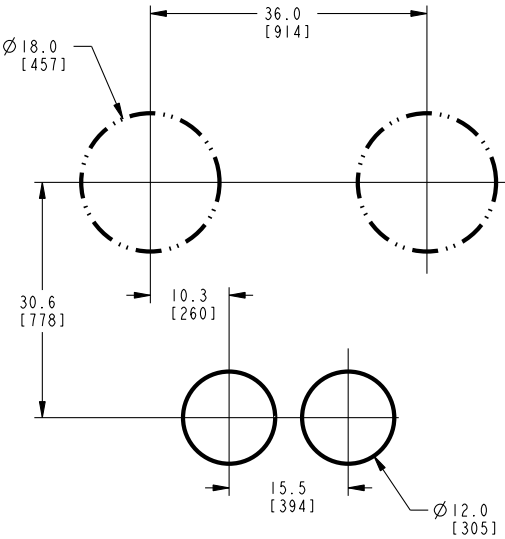
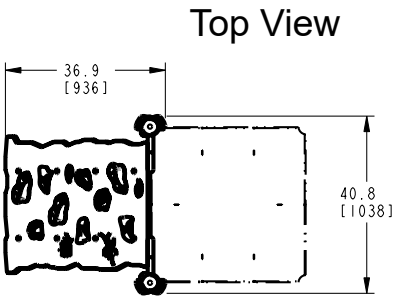


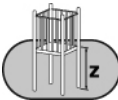
ASTM F1487: 60" (1524 mm)
CSA-Z614: 1524 mm
EN1176: 1524 mm



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

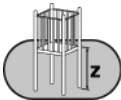
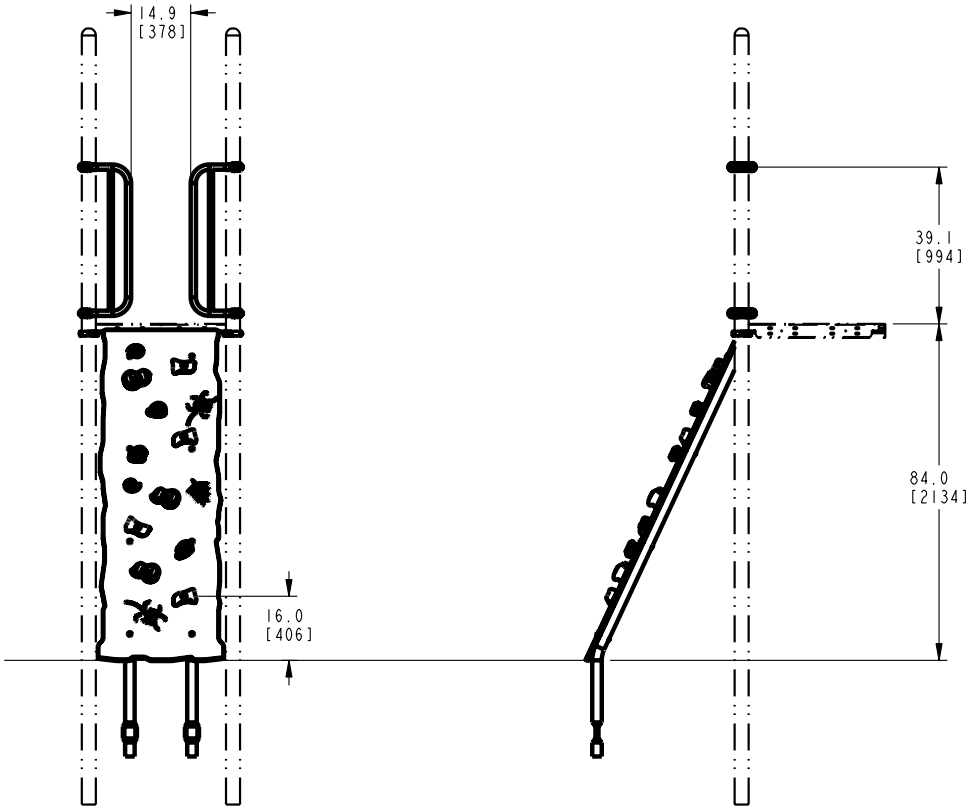
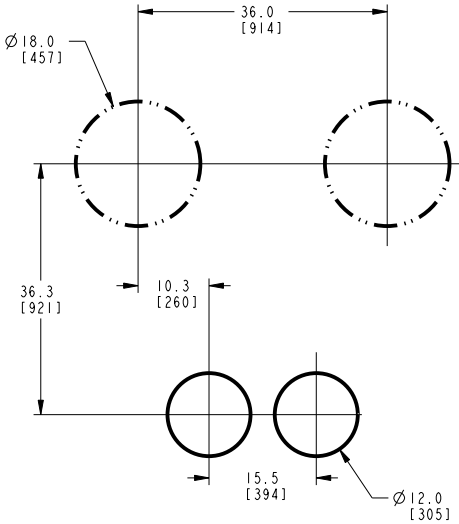
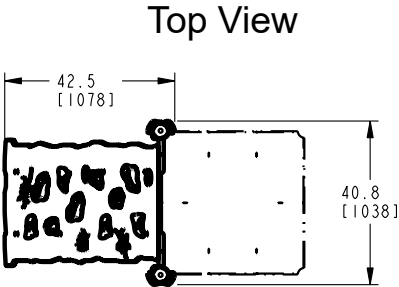



 ASTM F1487: 72" (1829 mm)
 CSA-Z614: 1829 mm
 EN1176: 1829 mm



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



ASTM F1487: 84" (2134 mm)
 CSA-Z614: 2134 mm
 EN1176: 2134 mm

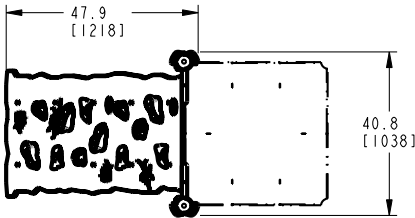


Installation Instructions

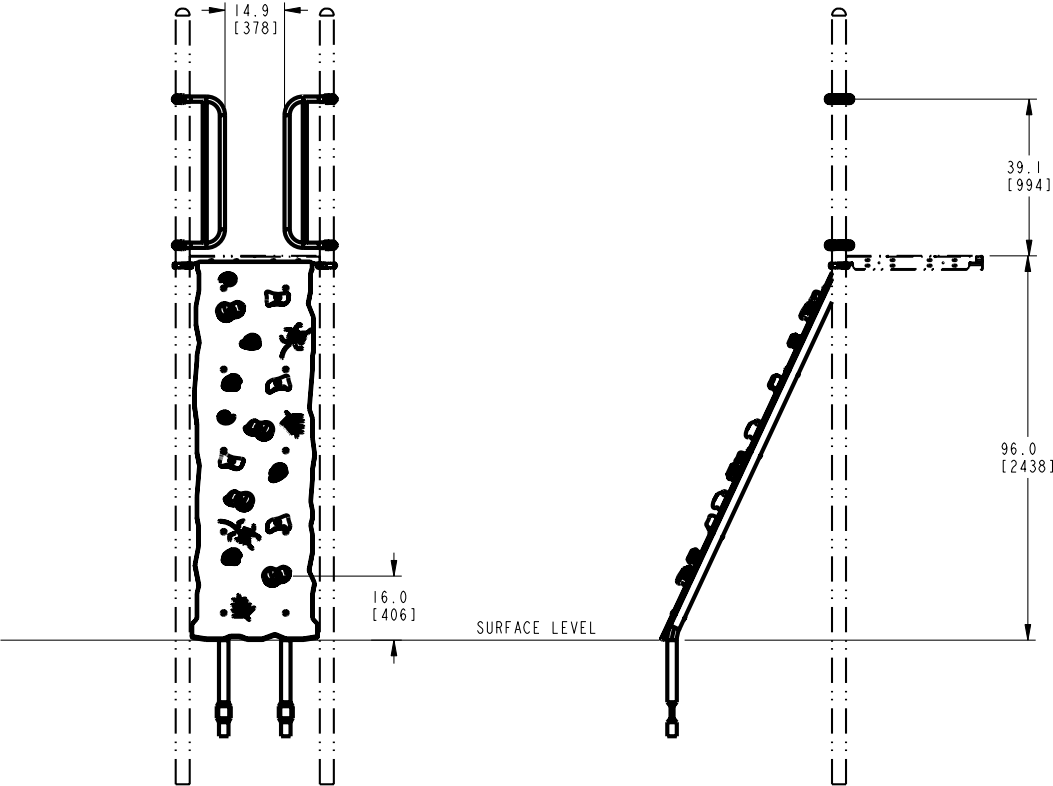
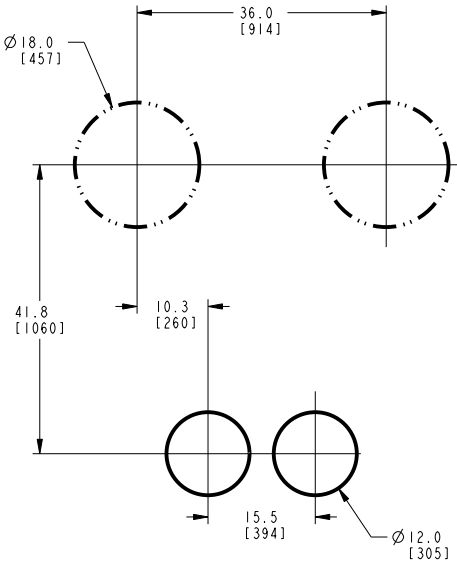
KEY

Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

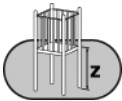
Top View



Footing Diagram



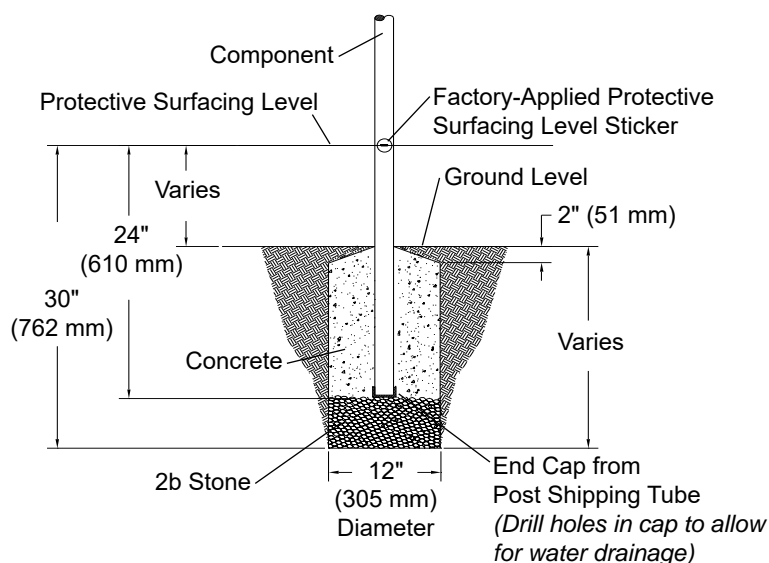
Elevation Views - CH6979 - 96" (2438 mm) Deck



ASTM F1487: 96" (2438 mm)
CSA-Z614: 2438 mm
EN1176: 2438 mm



Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.

- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.

- Do not encase bottom of support post in concrete. Place post directly on packed stone.

- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.

For example:

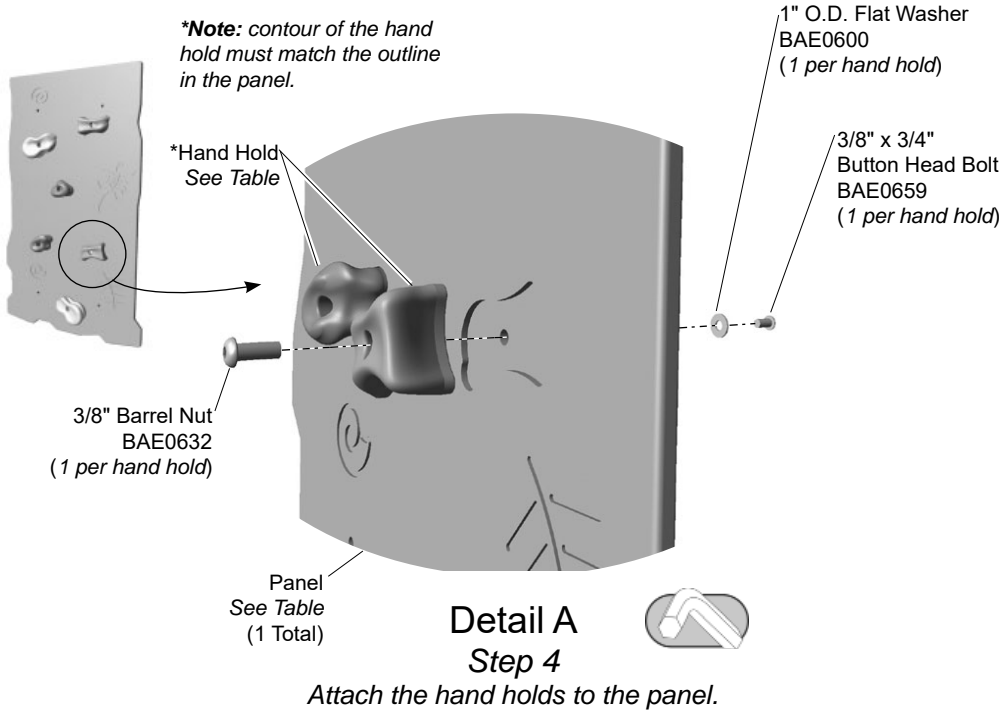
- If local soil is loose or unstable, a larger footing may be required.
- If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.

- Base of footing must be below frost line.

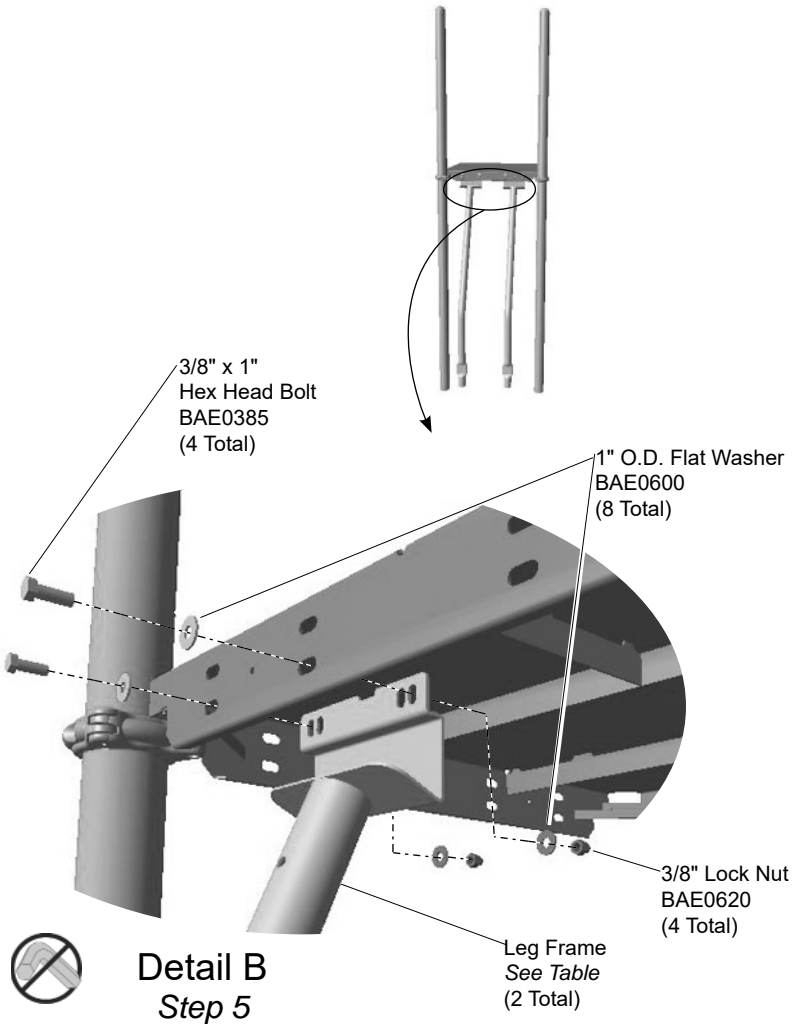
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 10.



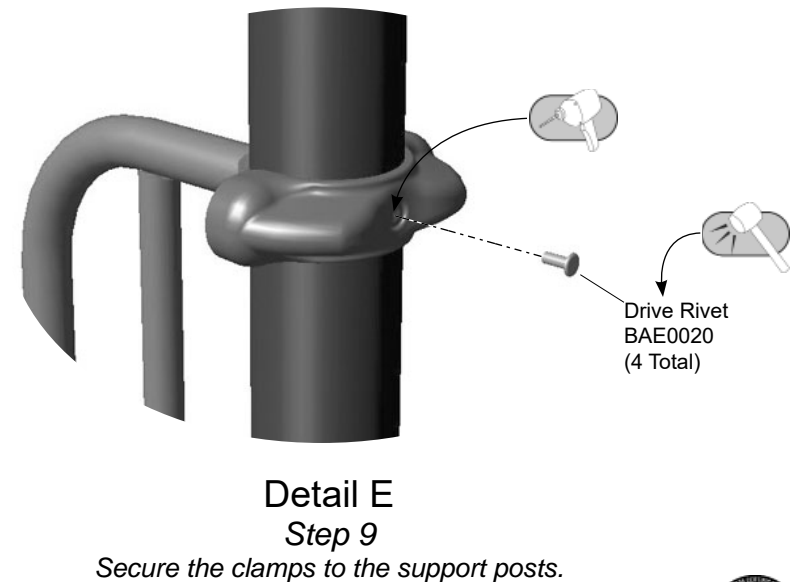
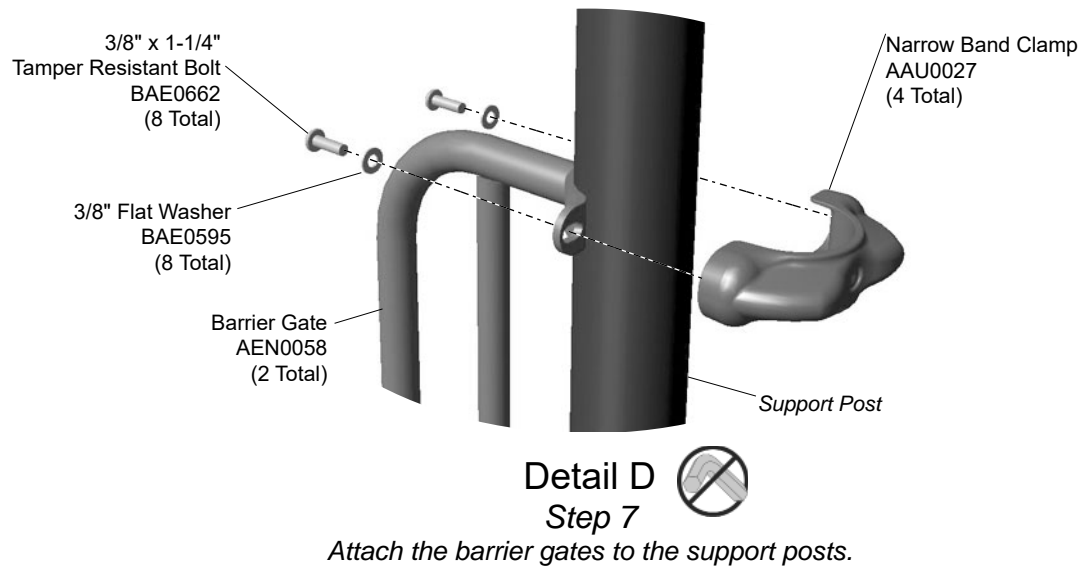
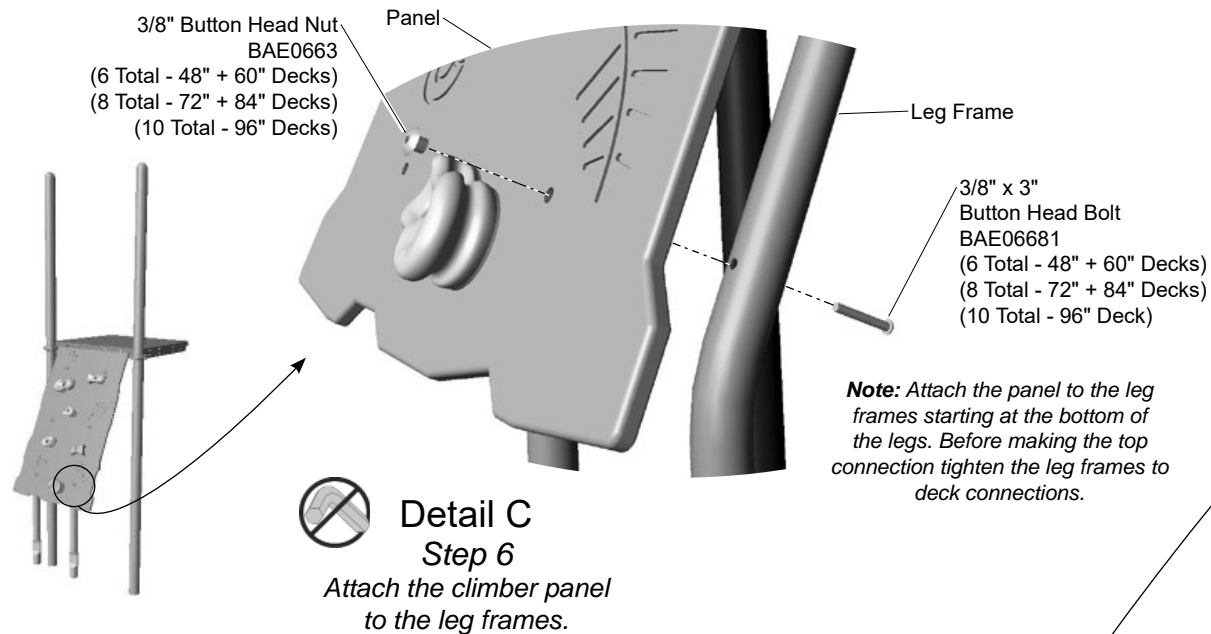
Model	CH6987	CH6988	CH6989	CH6986	CH6979
No. of Small Hand Holds (AAU0067)	2	3	3	3	4
No. of Medium Hand Holds (AAU0068)	2	3	3	4	4
No. of Large Hand Holds (AAU0069)	2	2	3	3	4
Panel Number	BFC3262	BFC3264	BFC3266	BFC3268	BFC3270



Model	CH6987	CH6988	CH6989	CH6986	CH6979
Leg Frame Part Number	AFR0956	AFR0958	AFR0960	AFR0962	AFR0964



Installation Instructions



Installation Instructions

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Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate the footings as shown in the **Component Footing Details** in the **Guidelines** at the beginning of this instruction book and on page 7 of this installation document.

Step 4: Attach the hand holds to the panel. See **Detail A**. Position each hand hold against a corresponding cutout in the panel and attach as shown. Fully tighten the hardware according to tightening torque specifications to pull the hand hold into the panel.

Torque Specifications:

Bolts and Nuts: Snug tighten and then tighten an additional one half turn.

Step 5: Attach the leg frames to the deck. See **Detail B**. Place the frame legs in their footings with the mounting bracket under the deck and align the lower holes. Use the slots indicated on each bracket and attach as shown.

Step 6: Attach the panel to the leg frames. See **Detail C**. Place the panel with the wider part at the bottom and align the side holes with the holes in the leg frames. Attach as shown.

Note: *Attach the panel to the leg frames starting at the bottom of the legs. Before making the top connection tighten the leg frames to deck connections.*

Step 7: Attach the barrier gates to the support posts. See **Detail D**. Place each gate against the post, and align a clamp with each gate band. Attach as shown. Leave the connections loose. Both gates should be mounted at the same height directly over the deck. The bottom of the gates must be less than 3.5" (89 mm) from the deck surface to prevent any entrapment issues.

Final Details.

Step 8: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and Nuts: Snug tighten and then tighten an additional one half turn.

Step 9: Install drive rivets. See **Detail E**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

Step 10: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.

CH6987 - 48" (1219 mm) INCLINED CLIFF HANGER

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	4
AAU0067	HANDLE - SMALL	2
AAU0068	HANDLE - MEDIUM	2
AAU0069	HANDLE - LARGE	2
AEN0058	BARRIER - 10-7/16" x 6-3/8" x 37-15/16"	2
AFR0956	FRAME - 2.38" O.D. x 70.27" w/BRACKET	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0385	BOLT - 3/8"-16 x 1 HEX HEAD	4
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	14
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	6
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	8
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	6
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	6
BFC3262	SHEET - .75" x 31.50" x 51.25"	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

CH6988 - 60" (1524 mm) INCLINED CLIFF HANGER

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	4
AAU0067	HANDLE - SMALL	3
AAU0068	HANDLE - MEDIUM	3
AAU0069	HANDLE - LARGE	2
AEN0058	BARRIER - 10-7/16" x 6-3/8" x 37-15/16"	2
AFR0958	FRAME - 2.38" O.D. x 82.27" w/BRACKET	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0385	BOLT - 3/8"-16 x 1 HEX HEAD	4
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	16
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	8
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	8
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	8
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	6
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	6
BFC3264	SHEET - .75" x 31.50" x 64.50"	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

CH6989 - 72" (1829 mm) INCLINED CLIFF HANGER

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	4
AAU0067	HANDLE - SMALL	3
AAU0068	HANDLE - MEDIUM	3
AAU0069	HANDLE - LARGE	3
AEN0058	BARRIER - 10-7/16" x 6-3/8" x 37-15/16"	2
AFR0960	FRAME - 2.38" O.D. x 94.27" w/BACKET	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0385	BOLT - 3/8"-16 x 1 HEX HEAD	4
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	17
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	9
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	9
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	8
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	8
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	8
BFC3266	SHEET - .75" x 31.50" x 77.75"	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

CH6986 - 84" (2134 mm) INCLINED CLIFF HANGER

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	4
AAU0067	HANDLE - SMALL	3
AAU0068	HANDLE - MEDIUM	4
AAU0069	HANDLE - LARGE	3
AEN0058	BARRIER - 10-7/16" x 6-3/8" x 37-15/16"	2
AFR0962	FRAME - 2.38" O.D. x 106.27" w/BACKET	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0385	BOLT - 3/8"-16 x 1 HEX HEAD	4
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	18
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	10
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	10
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	8
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	8
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	8
BFC3268	SHEET - .75" x 31.50" x 91.00"	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

CH6979 - 96" (2438 mm) INCLINED CLIFF HANGER

PART NO.	DESCRIPTION	QTY.
AAU0027	CLAMP - 3-1/2" NARROW ALUMINUM BAND	4
AAU0067	HANDLE - SMALL	4
AAU0068	HANDLE - MEDIUM	4
AAU0069	HANDLE - LARGE	4
AEN0058	BARRIER - 10-7/16" x 6-3/8" x 37-15/16"	2
AFR0964	FRAME - 2.38" O.D. x 118.27" w/BACKET	2 1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	4
BAE0385	BOLT - 3/8"-16 x 1 HEX HEAD	4
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	20
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	12
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	8
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	10
BAE06681	BOLT - 3/8"-16 x 3" BUTTON HEAD - SS	10
BFC3270	SHEET - .75" x 31.50" x 104.00"	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



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Assembly View (representative model)

Model	Deck Height
ZZCH7160	72" (1830 mm)
ZZCH7166	84" (2134 mm)
ZZCH7167	96" (2743 mm)

Installation Instructions

Challengers® Models CH7160,
CH7166, and CH7167


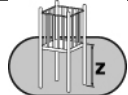

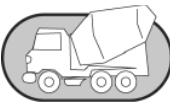
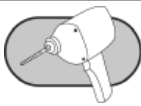


Twisted Climber

6 ft. (1829 mm), 7 ft. (2134 mm), and 8 ft. (2438 mm)

Installation Preparation

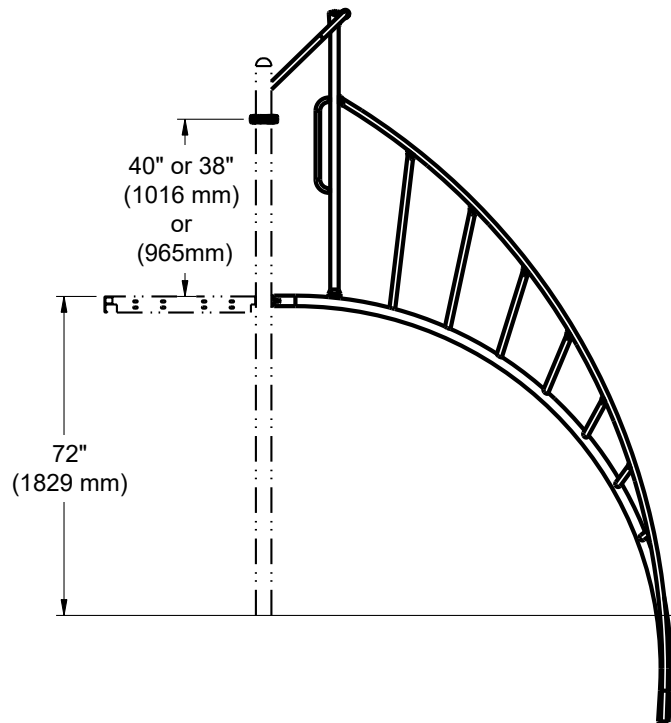
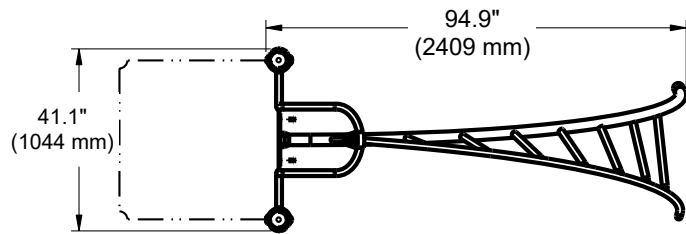
Recommended Crew: Two (2) adults
 Installation Time: 2 installation-hours
 Concrete Required: 0.6 cubic yard (0,4 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

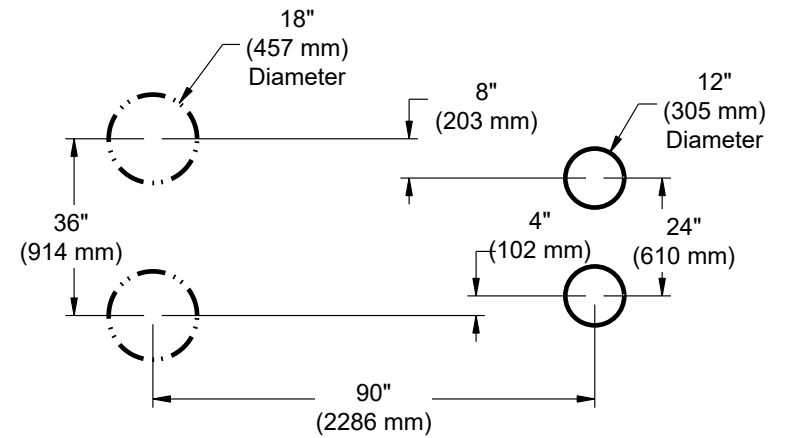
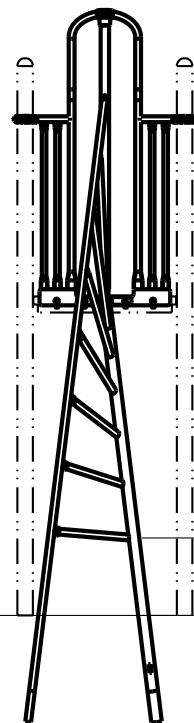
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

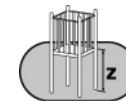
Top View



Elevation Views
ZZCH7160



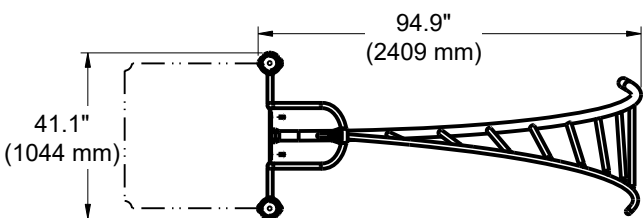
Footing Diagram
All Models



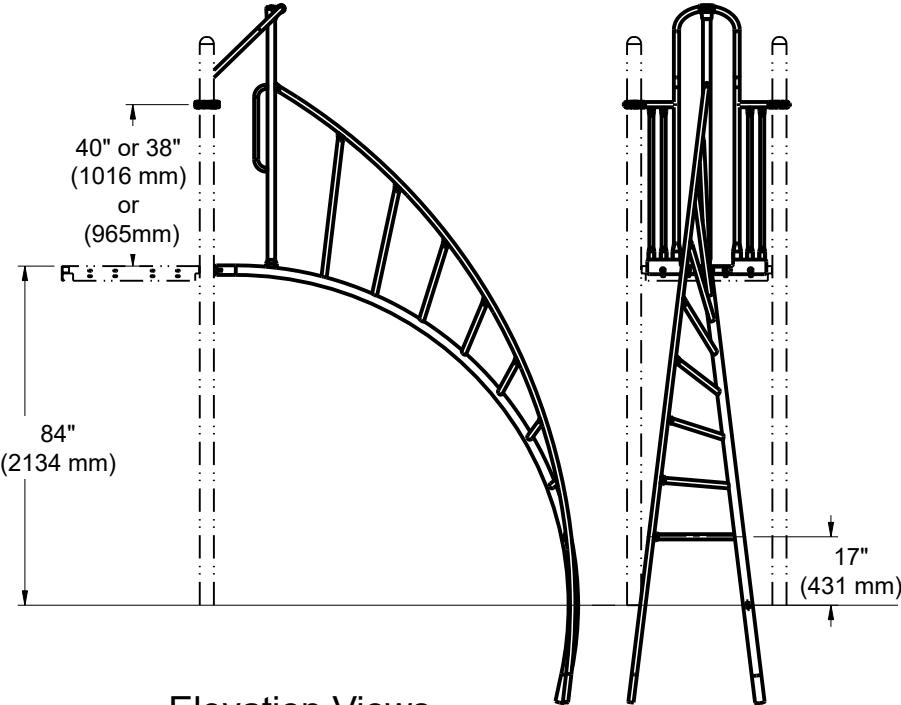
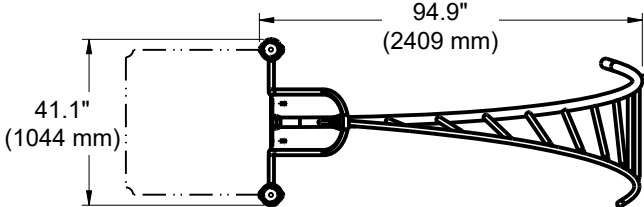
ASTM F1487: 72" (1829 mm)
CSA-Z614: 1829 mm
EN1176: 1829 mm

Installation Instructions

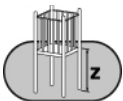
Top View



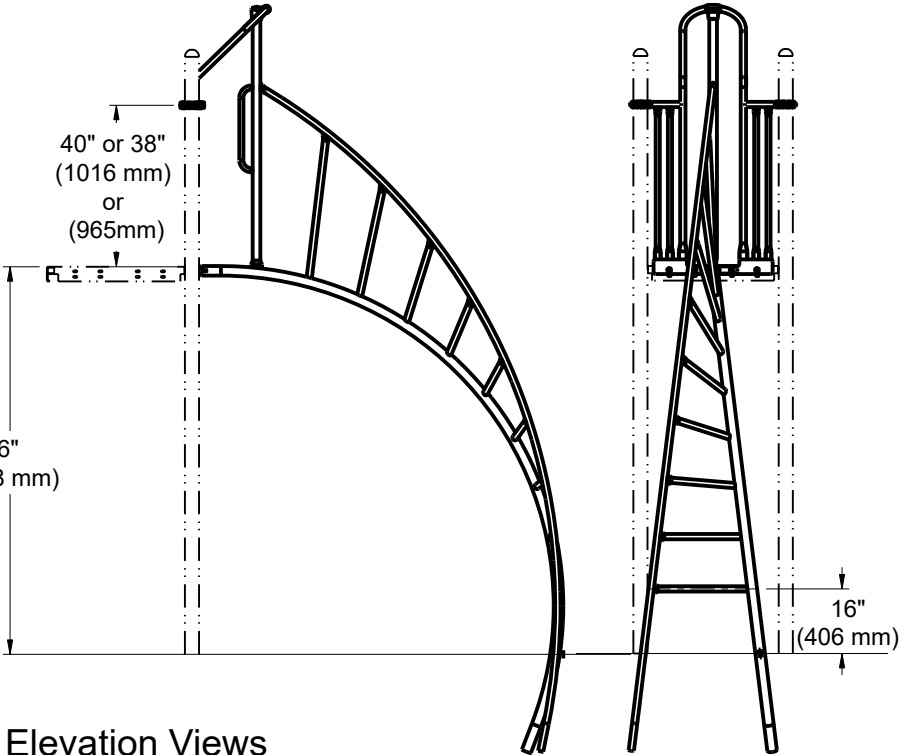
Top View



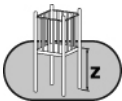
Elevation Views
ZZCH7166



ASTM F1487: 84" (2134 mm)
CSA-Z614: 2134 mm
EN1176: 2134 mm



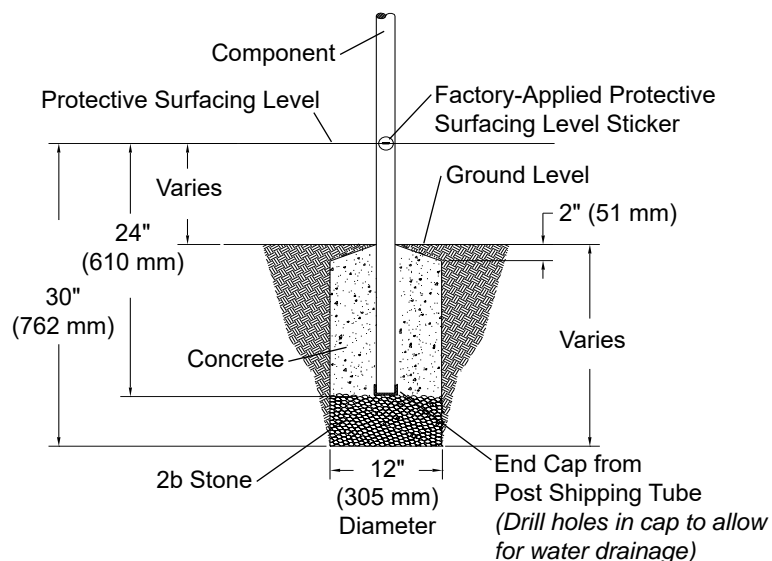
Elevation Views
ZZCH7167



ASTM F1487: 96" (2438 mm)
CSA-Z614: 2438 mm
EN1176: 2438 mm



Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

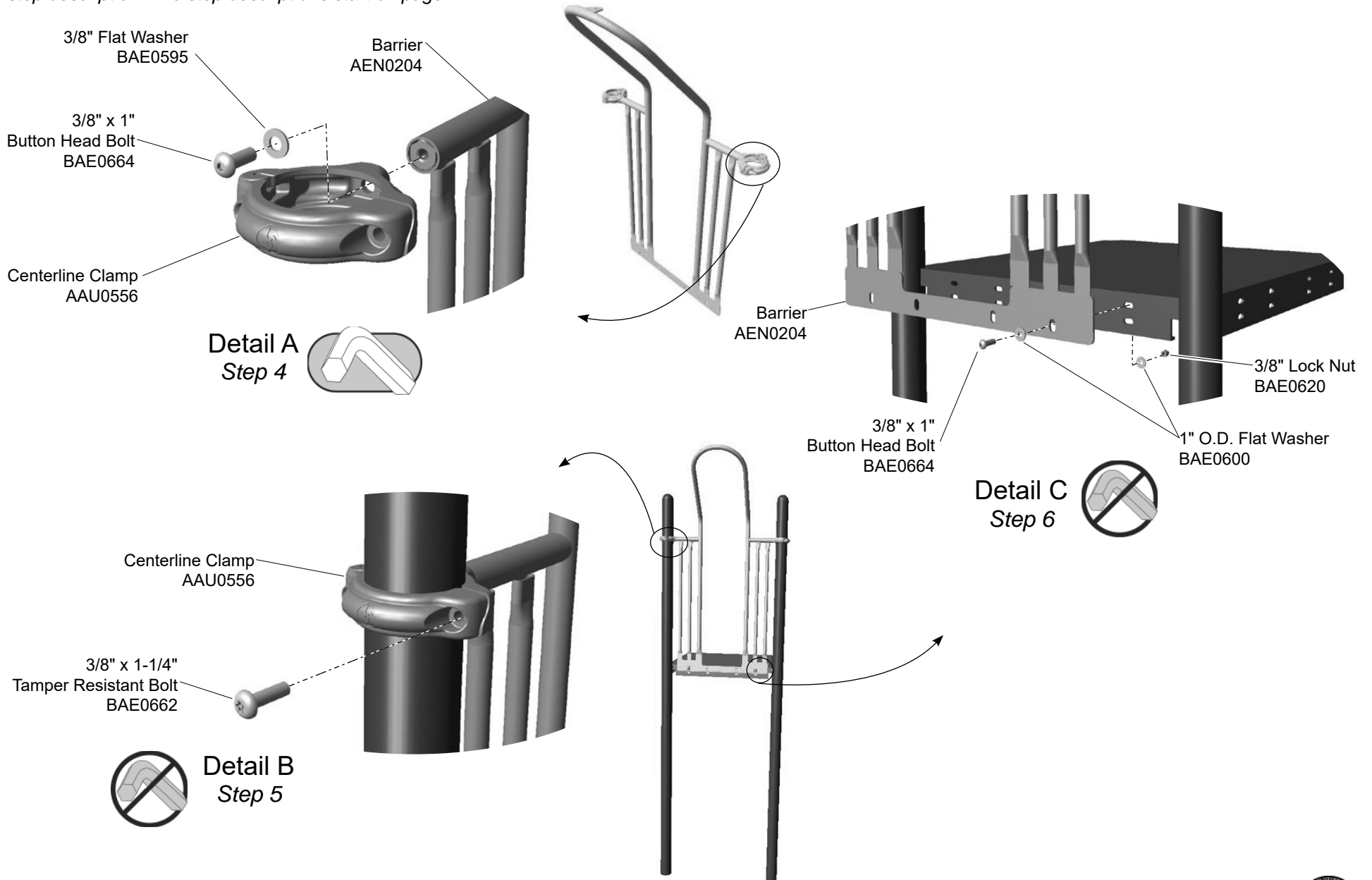
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

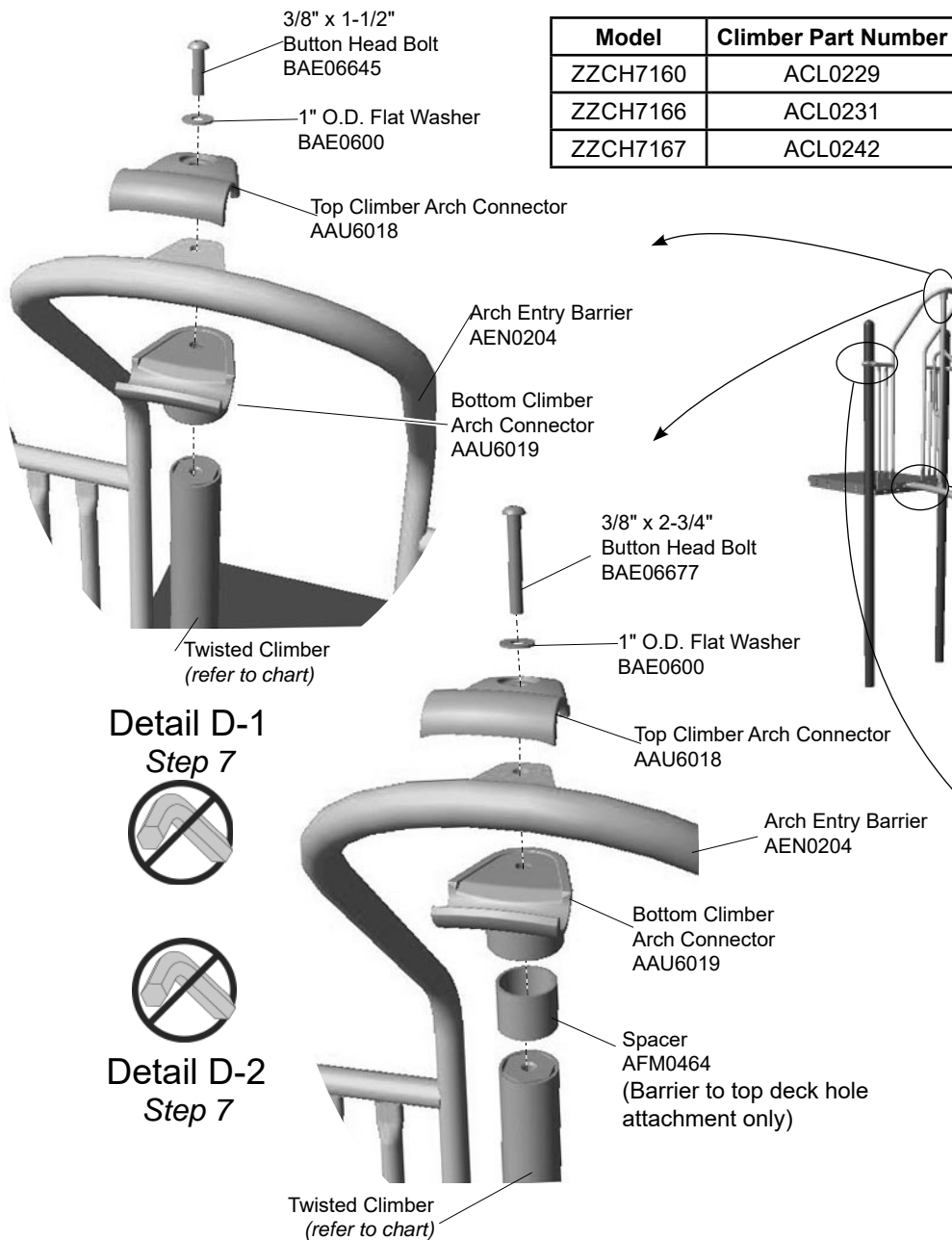
- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



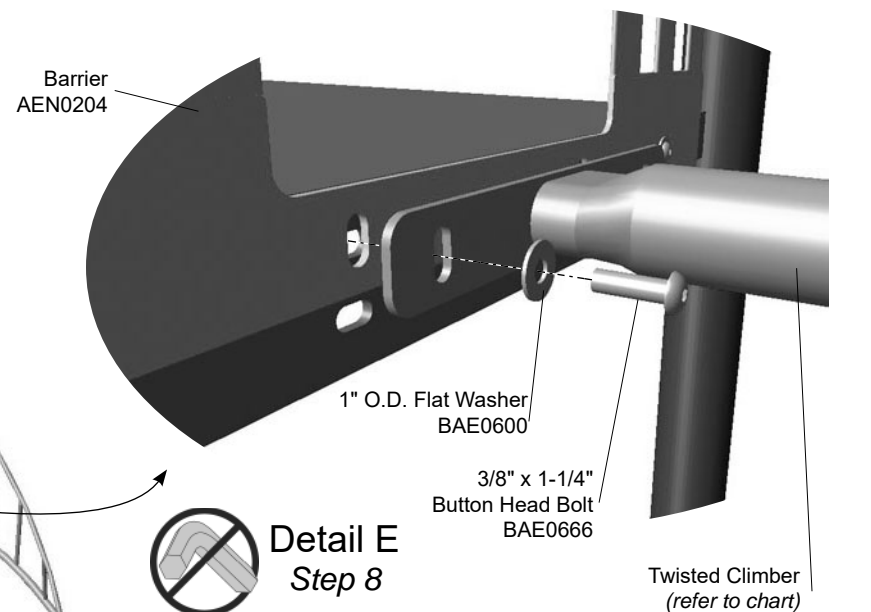
Installation Instructions



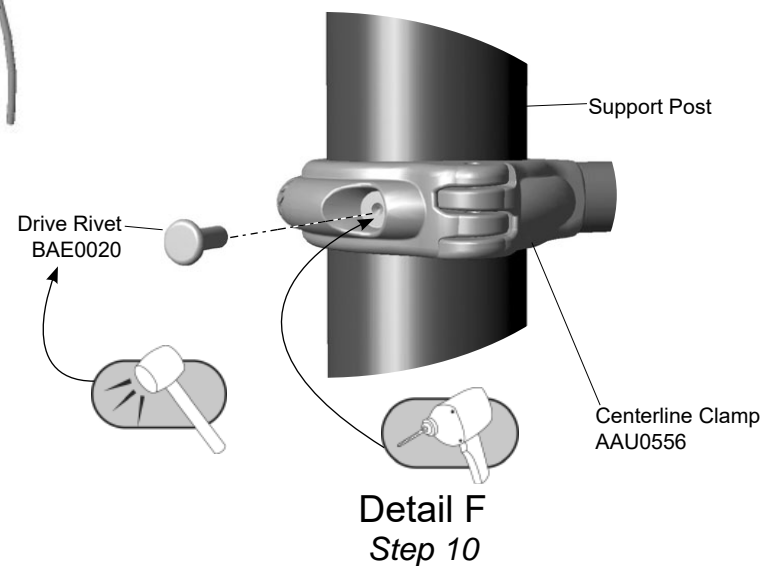
Detail D-1
Step 7



Detail D-2
Step 7



Important Note: If attaching the barrier through the lower hole, the climber will attach to the upper deck hole with a 1" bolt (BAE0664).



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Component Footing Details** in the *Challenger Guidelines* and on page 4 of this installation document.

Attach the clamps to the arch entry barrier.

__Step 4: Attach the clamps to the barrier. See **Detail A**. Select the arch entry barrier, centerline clamps, and the appropriate hardware. There are (2) two connections. Position the neck of each clamp against an end of the barrier top rail and align holes. Attach as shown. Turn the clamp so that the hinge faces away from the entry, and fully tighten bolt.

Attach the clamps to the support posts.

__Step 5: Attach the clamps to the posts. See **Detail B**. Select the appropriate hardware. There are (2) two connections. Lift the barrier into position against deck and close the clamps around the posts. Insert and thread each bolt into a clamp. Leave the clamp connection loose for deck connection adjustments.

Attach the barrier to the deck.

__Step 6: Attach the barrier to the deck. See **Detail C**. Select the appropriate hardware. There are (2) two connections. *Attach only the outside holes*. The barrier can be attached to either the *upper* or *lower* deck holes to avoid conflicts with adjacent clamps. Attach as shown.

Note: The upper or lower deck attachment will effect connections in **Step 7**.

Attach the climber to the barrier.

__Step 7: Attach the climber to the top of the barrier. See **Details D-1 and D-2**. Select the climber, the top and bottom climber connectors, the spacer, and the appropriate hardware. There is (1) one connection. Place the climber into the excavated footing. Align the climber with the holes in the barrier. If the barrier is mounted to the lower deck holes, *do not use the spacer*. Refer to **Detail D-1**. If the barrier is mounted in the *upper* set of deck holes, *use the spacer as shown*. Refer to **Detail D-2**. Do not fully tighten the connection.

__Step 8: Attach the climber to the barrier/deck. See **Detail E**. Select the appropriate hardware. There are (2) two connections. Align the climber with the holes in the barrier. Attach as shown.

Important Note: If the barrier is attached through the lower hole in **Step 6**, the climber will attach to the upper deck hole with a 1" bolt (BAE0664).

Final Details.

__Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 10: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH7160 - 6 ft. (1829 mm) TWISTED CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0229	CLIMBER - 6' TWISTED	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	13
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1

CH7166 - 7 ft. (2134 mm) TWISTED CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0231	CLIMBER - 7' TWISTED	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	13
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1

CH7167 - 8 ft. (2438 mm) TWISTED CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0242	CLIMBER - 8' TWISTED	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	13
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	6
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	2
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1





Assembly View (representative model)

Model	Deck Height
ZZCH7168	72" (1829 mm)
ZZCH7169	84" (2134 mm)
ZZCH7170	96" (2438 mm)

Installation Instructions

Challengers® Models CH7168,
CH7169, and CH7170

Tower Climber

6 ft. (1829 mm), 7 ft. (2134 mm), and 8 ft. (2438 mm)

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 2 man-hours
 Concrete Required: 0.06 cubic yard (0,04 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

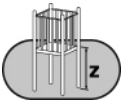
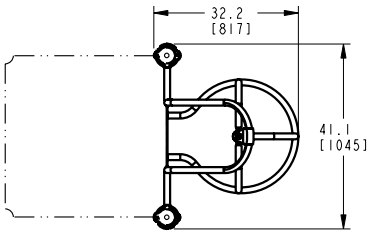
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

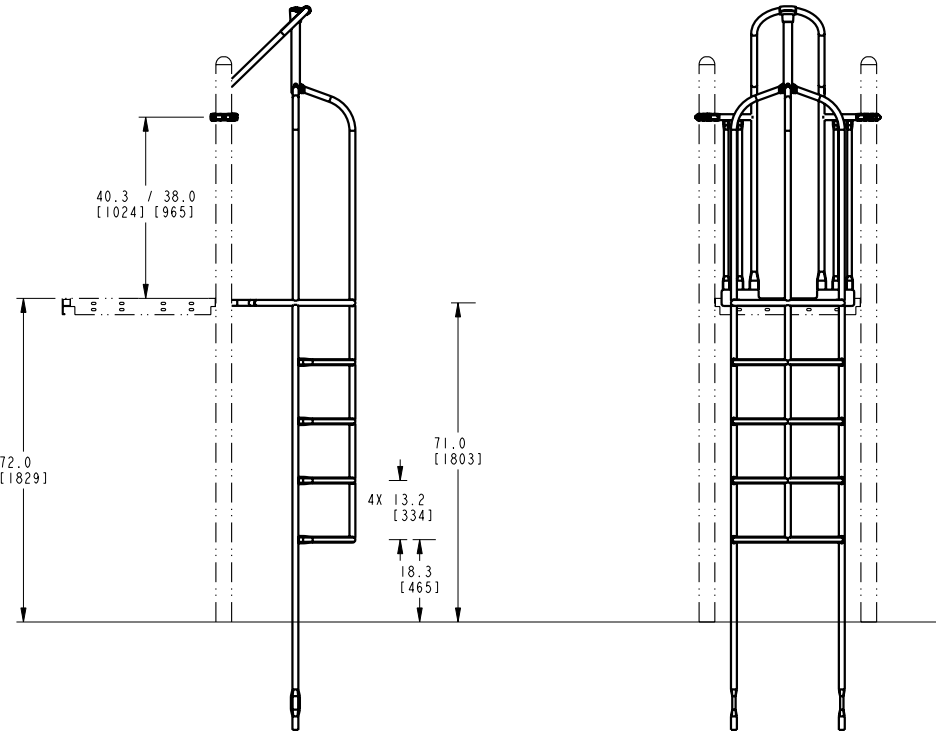
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

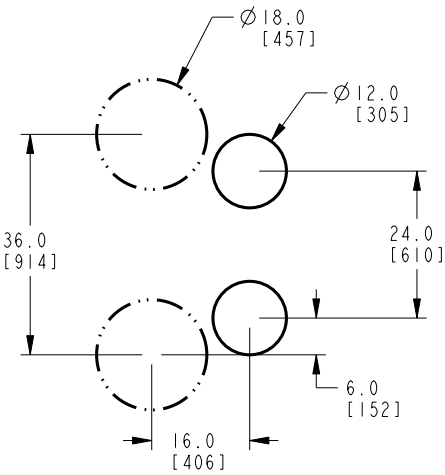
Top View



ASTM F1487: 72" (1829 mm)
CSA-Z614: 1829 mm
EN1176: 1829 mm



Elevation Views
ZZCH7168



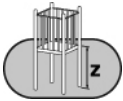
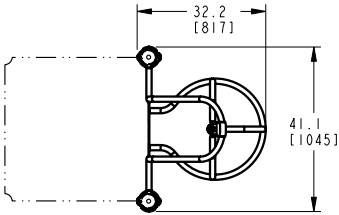
Footing Diagram
All Models



Installation Instructions

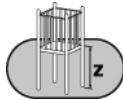
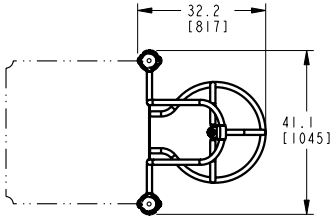
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View

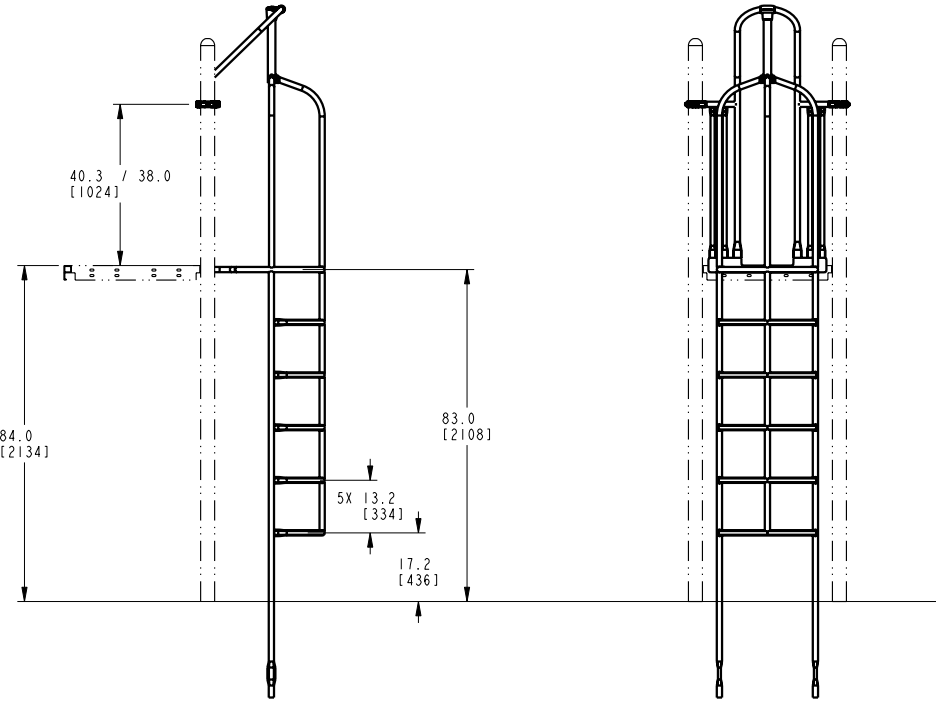


ASTM F1487: 84" (mm)
CSA-Z614: 2134 mm
EN1176: 2134 mm

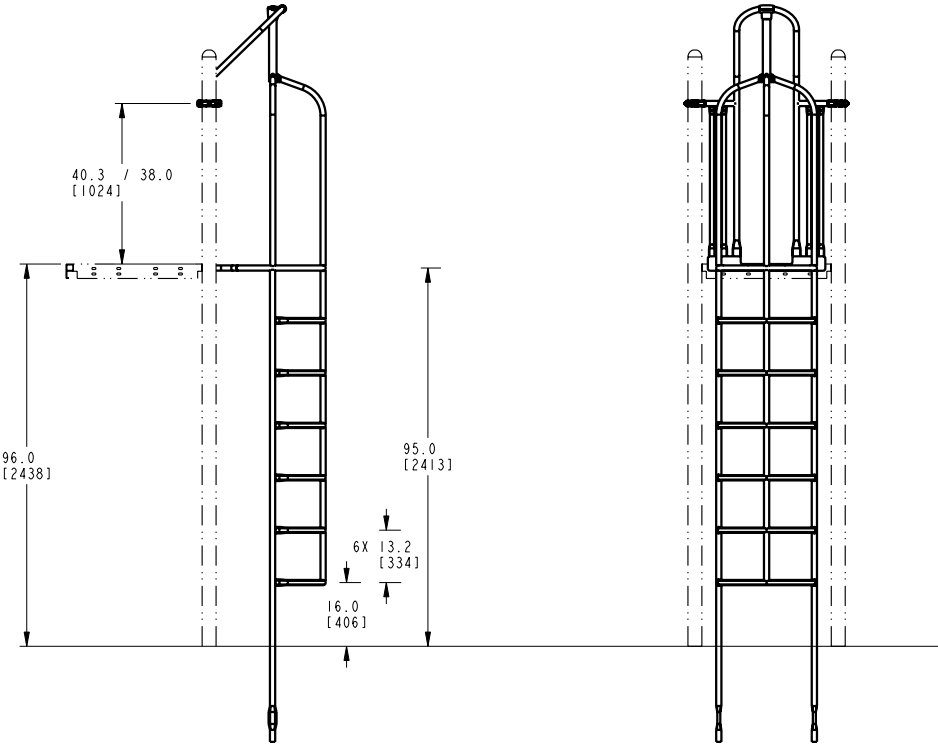
Top View



ASTM F1487: 96" (2438 mm)
CSA-Z614: 2438 mm
EN1176: 2438 mm



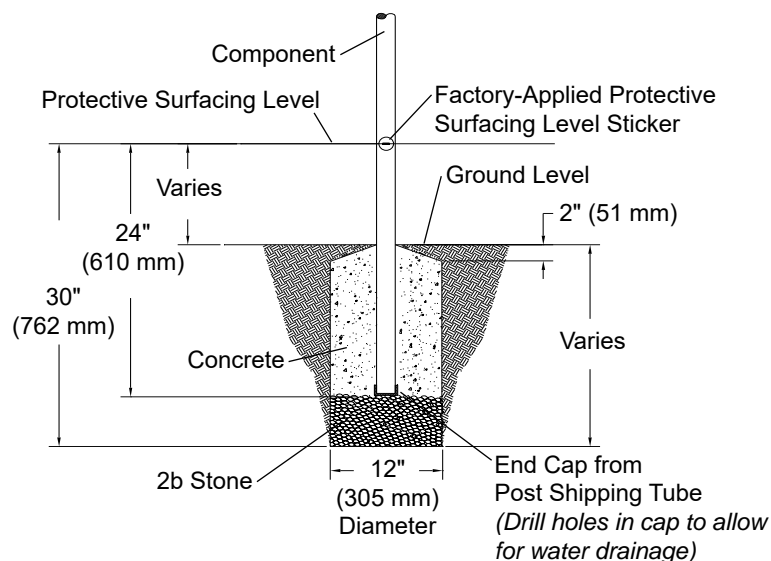
Elevation Views
ZZCH7169



Elevation Views
ZZCH7170



Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.

- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.

- Do not encase bottom of support post in concrete. Place post directly on packed stone.

- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.

For example:

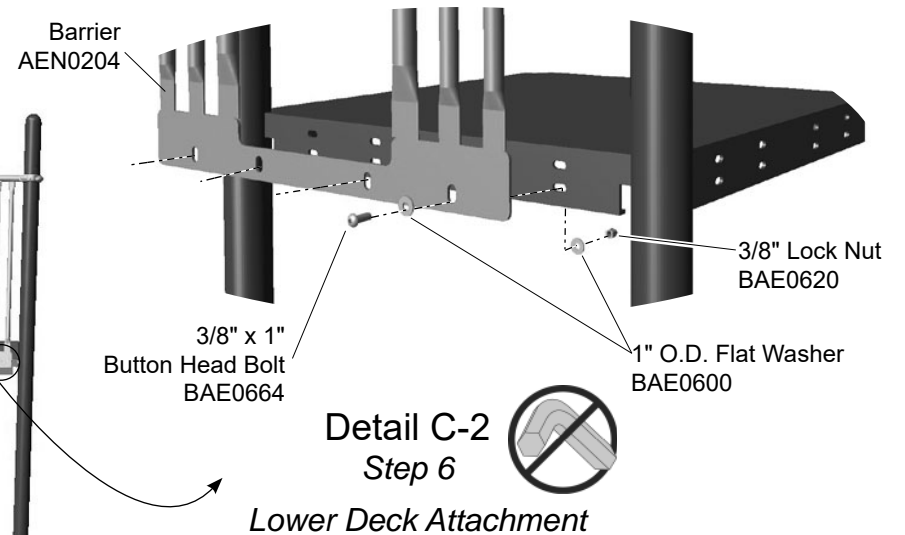
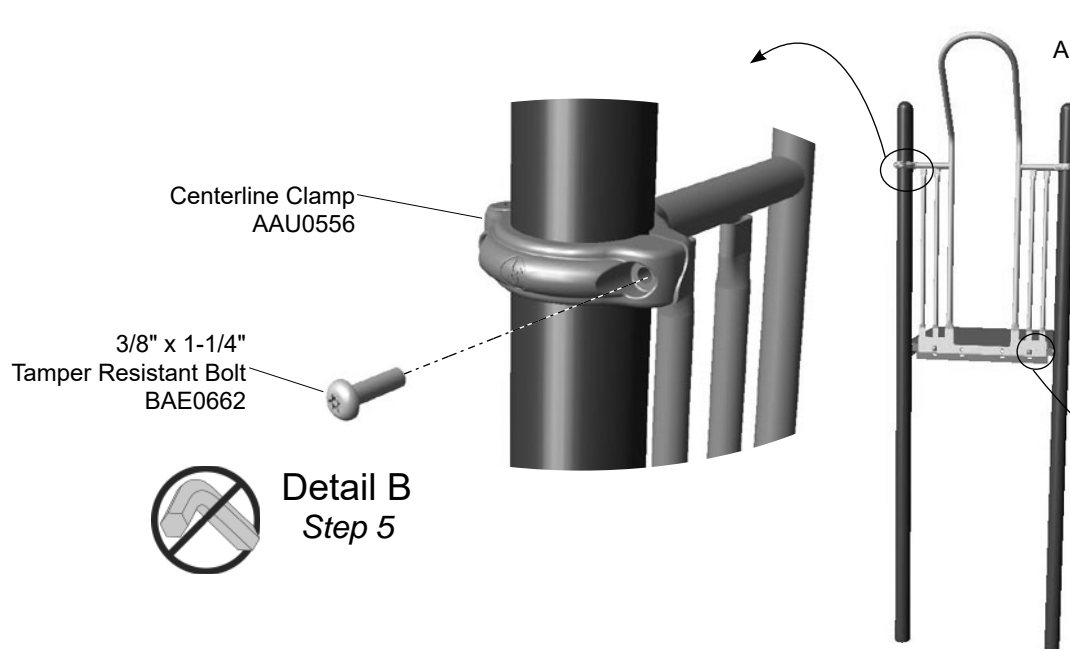
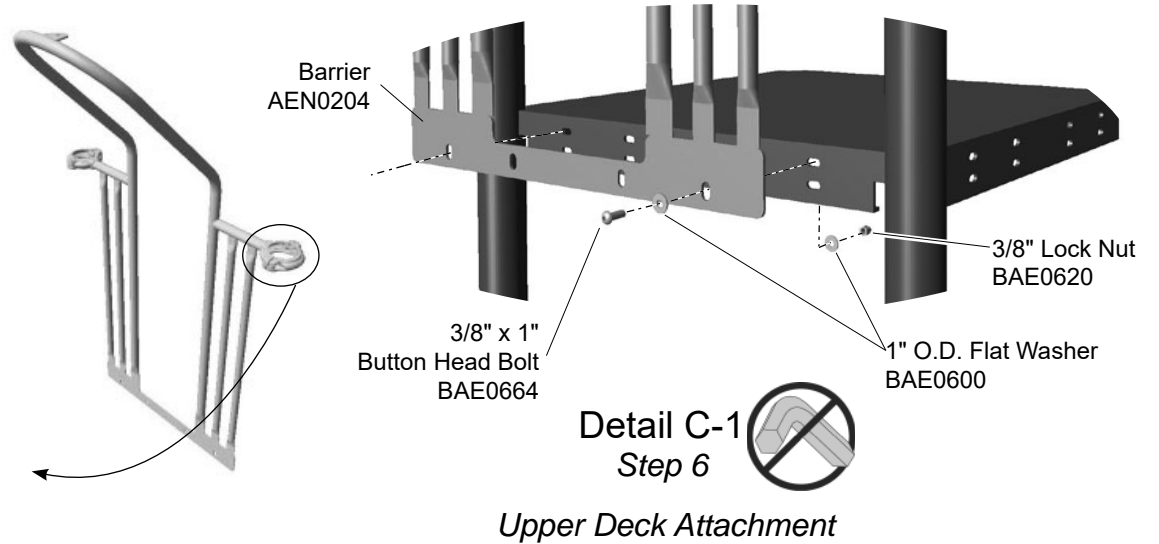
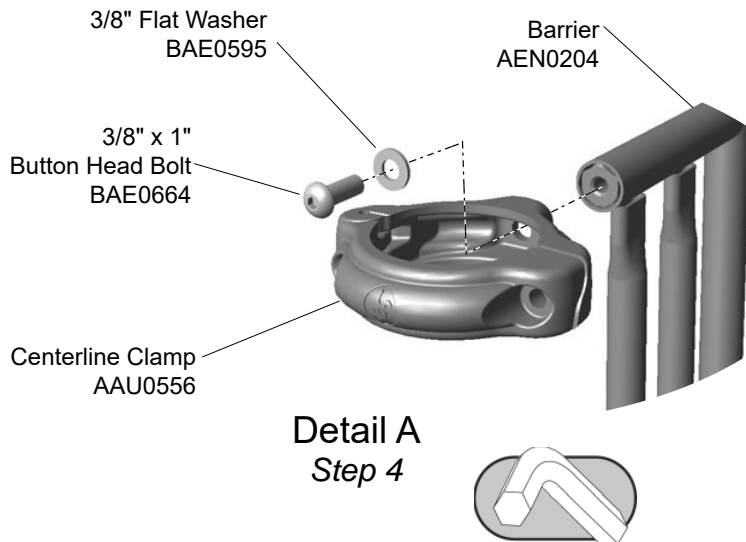
- If local soil is loose or unstable, a larger footing may be required.
- If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.

- Base of footing must be below frost line.

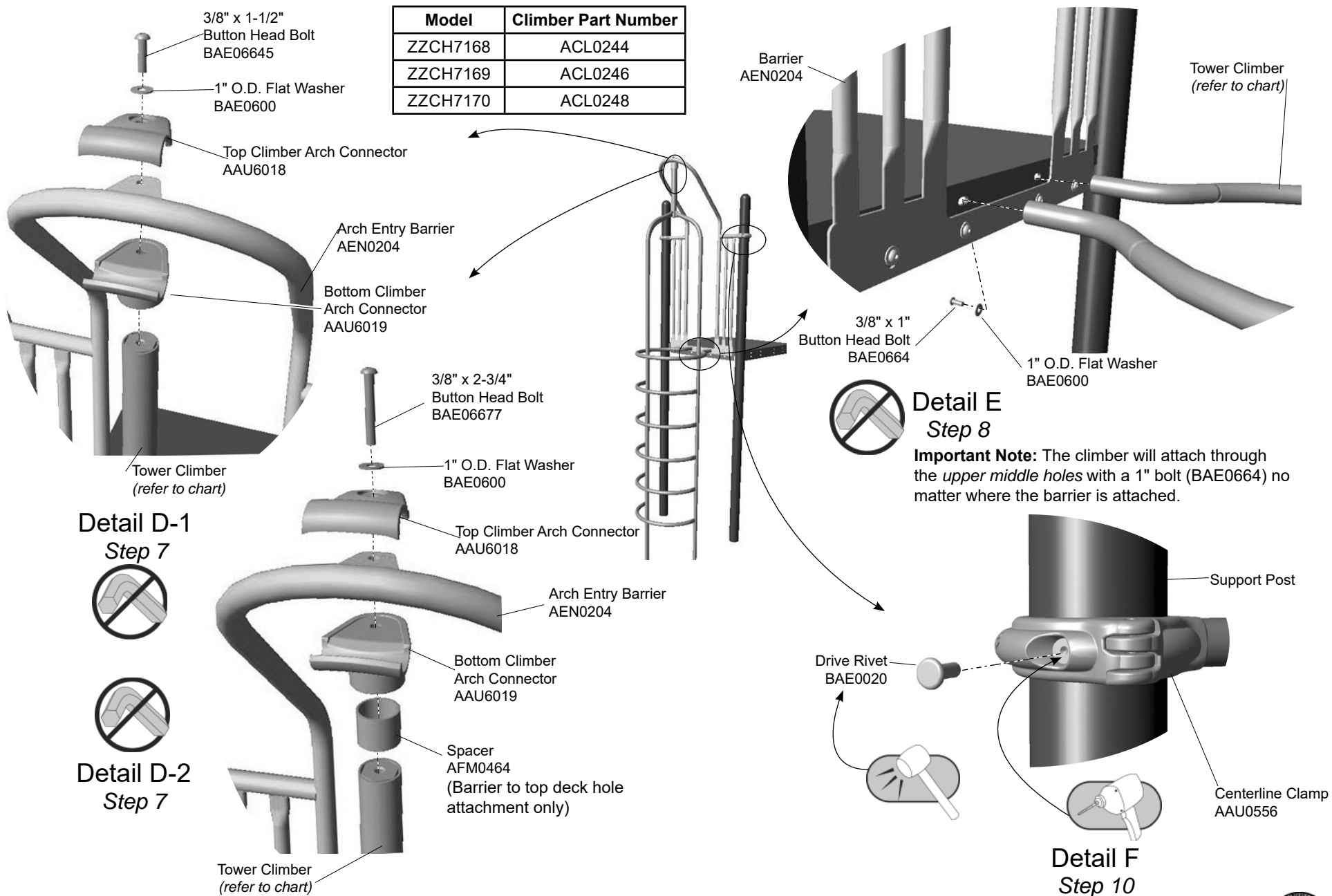
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Component Footing Details** in the *Challenger Guidelines* and on page 4 of this installation document.

Attach the clamps to the arch entry barrier.

Step 4: Attach the clamps to the barrier. See **Detail A**. Select the arch entry barrier, centerline clamps, and the appropriate hardware. There are (2) two connections. Position the neck of each clamp against an end of the barrier top rail and align holes. Attach as shown. Turn the clamp so that the hinge faces away from the entry, and fully tighten bolt.

Attach the clamps to the support posts.

Step 5: Attach the clamps to the posts. See **Detail B**. Select the appropriate hardware. There are (2) two connections. Lift the barrier into position against deck and close the clamps around the posts. Insert and thread each bolt into a clamp. Leave the clamp connection loose for deck connection adjustments.

Attach the barrier to the deck.

Step 6: Attach the barrier to the deck. See **Detail C-1 or Detail C-2**. Select the appropriate hardware. The barrier can be attached to either the *upper* or *lower* deck holes to avoid conflicts with adjacent clamps. Follow the appropriate direction.

Upper deck attachment: If the barrier attaches to the upper deck holes, there are (2) two connections. See **Detail C-1**. *Attach only the outside holes*. Attach as shown.

Lower deck attachment: If the barrier attaches to the lower deck holes, there are (4) four connections. See **Detail C-2**. *Connect through all four holes*. Attach as shown.

Note: The upper or lower deck attachment will effect connections in **Step 7**.

Attach the climber to the barrier.

Step 7: Attach the climber to the top of the barrier. See **Details D-1 and D-2**. Select the climber, the top and bottom climber connectors, the spacer, and the appropriate hardware. There is (1) one connection. Place the climber into the excavated footing. Align the climber with the holes in the barrier. If the barrier is mounted to the lower deck holes, *do not use the spacer*. Refer to **Detail D-1**. If the barrier is mounted in the *upper* set of deck holes, *use the spacer as shown*. Refer to **Detail D-2**. Do not fully tighten the connection.

Step 8: Attach the climber to the barrier/deck. See **Detail E**. Select the appropriate hardware. There are (2) two connections. Align the climber with the *upper* holes in the barrier. Attach as shown.

Important Note: The climber will attach through the *upper middle holes* with a 1" bolt (BAE0664) no matter where the barrier is attached in **step 6**.

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 10: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH7168 - 6 ft. (1829 mm) TOWER CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0244	CLIMBER - 6' TOWER	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	11
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1

CH7170 - 8 ft. (2438 mm) TOWER CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0248	CLIMBER - 8' TOWER	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING - 1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	11
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1

CH7169 - 7 ft. (2134 mm) TOWER CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
AAU6018	CONNECTOR - CLIMBER ARCH TOP	1
AAU6019	CONNECTOR - CLIMBER ARCH BOTTOM	1
ACL0246	CLIMBER - 7' TOWER	1
AEN0204	BARRIER - ARCH ENTRY 66-15/32" x 30-1/2"	1
AFM0464	CUT TUBING -1.90" O.D. x 1.50"	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	11
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TMPR RESISTANT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	1
BAE06677	BOLT - 3/8"-16 x 2-3/4" BUTTON HEAD - SS	1





Assembly View (representative model)


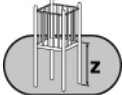

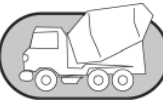
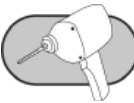


Installation Instructions Challengers®

Models CH7217, CH7218 and CH7219
36 in. (914 mm), 48 in. (1219 mm)
and 60 in. (1524 mm) Rope Ascension

Installation Preparation

Recommended Crew: Two (2) adults
Installation Time: 3 man-hours
Concrete Required: 0.18 cubic yard (0,15 cubic meters)
Use Zone: Refer to Master Drawing
User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

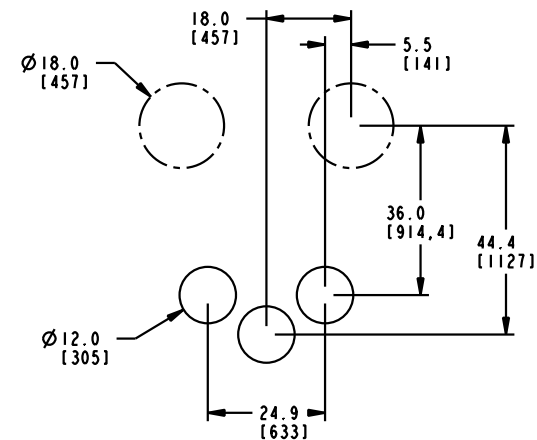
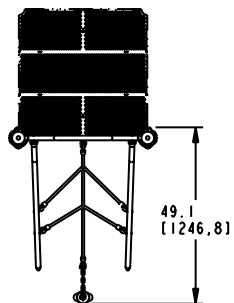
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

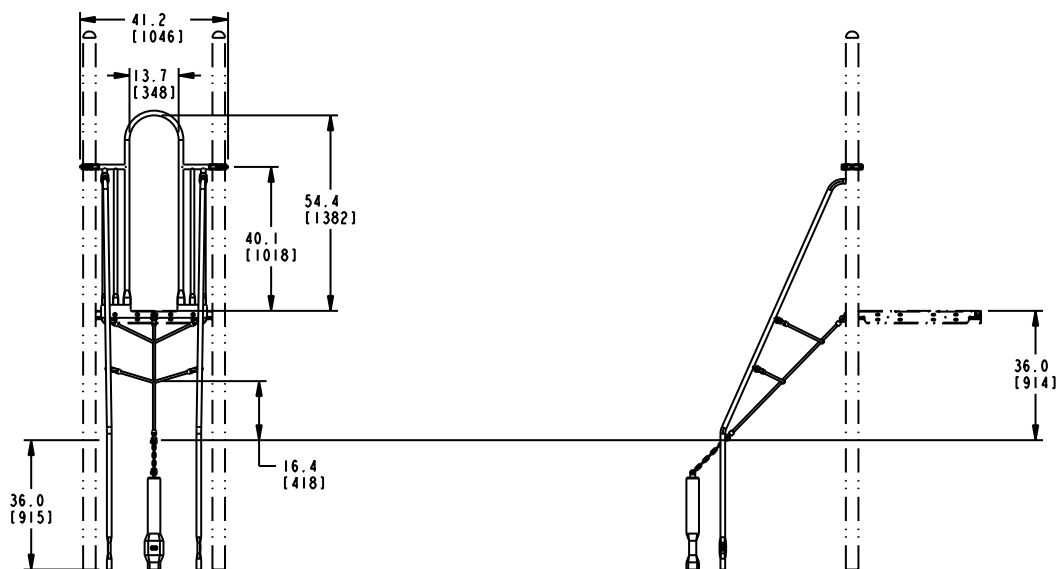
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

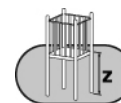
Top View



Footing Diagram



Elevation Views
CH7217

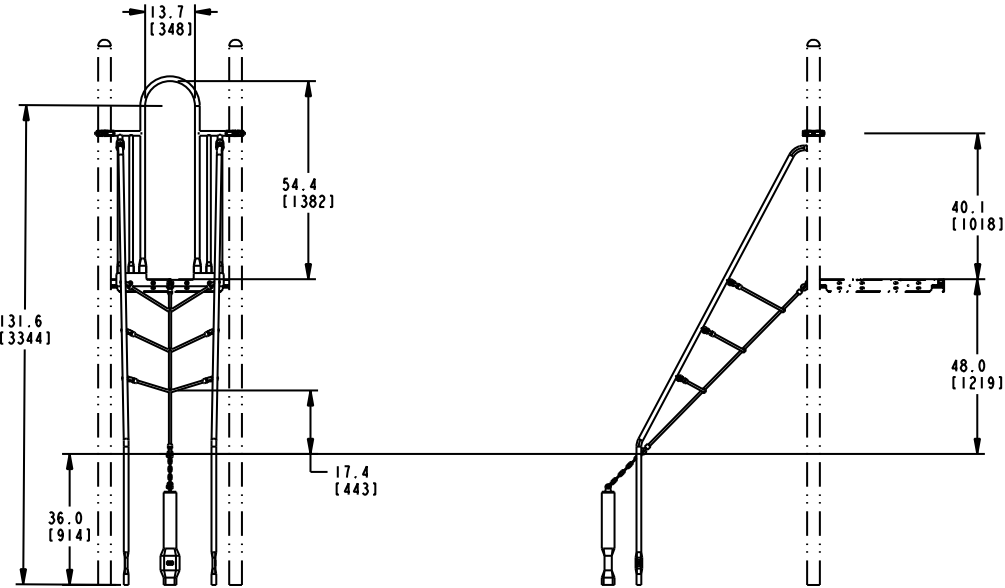
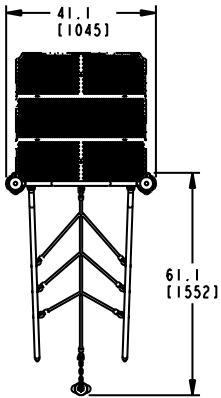


ASTM F1487: 36" (914 mm)
CSA-Z614: 914 mm
EN1176: 914 mm

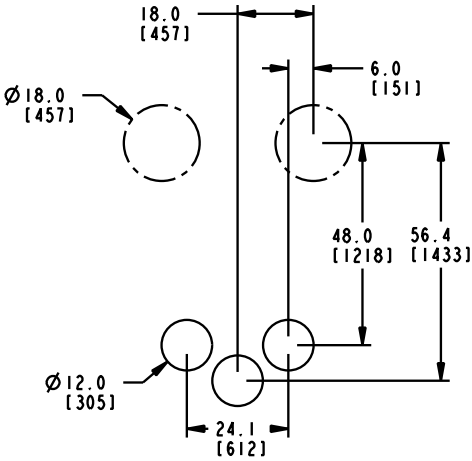
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

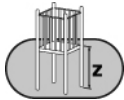
Top View



Elevation Views
CH7218



Footing Diagram



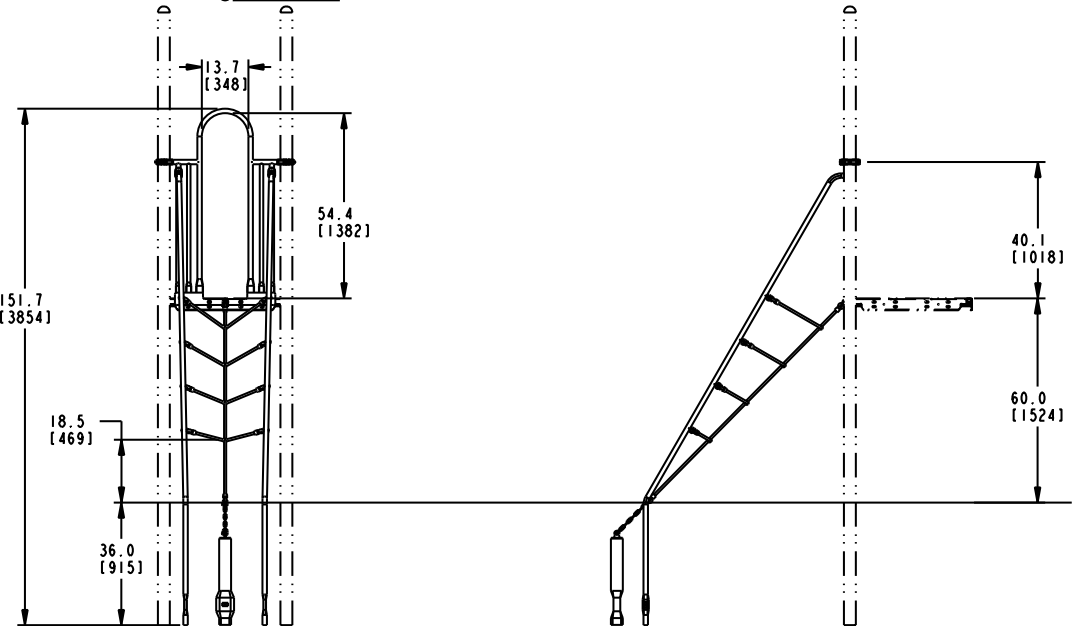
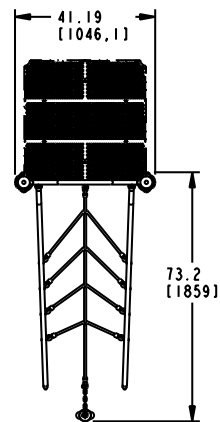
ASTM F1487: 48" (1219 mm)
CSA-Z614: 1219 mm
EN1176: 1219 mm



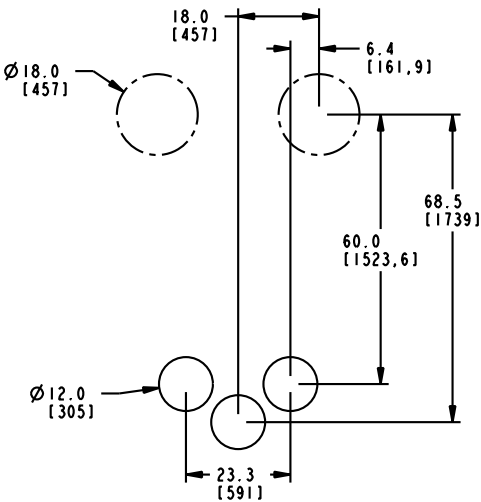
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

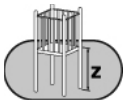
Top View



Elevation Views
CH7219



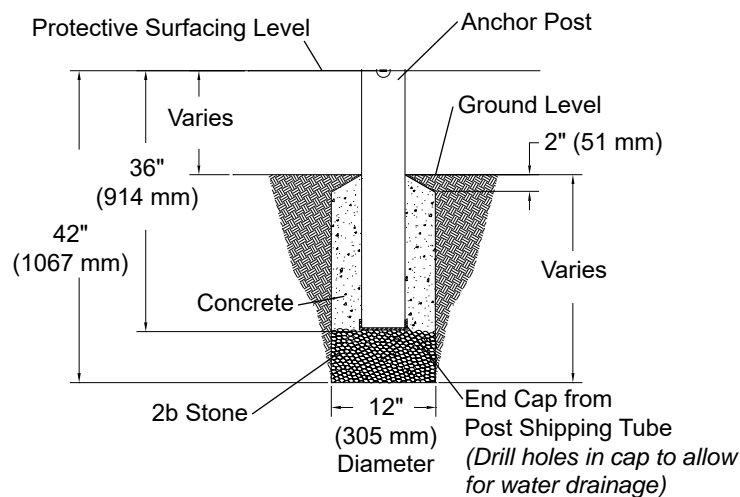
Footing Diagram



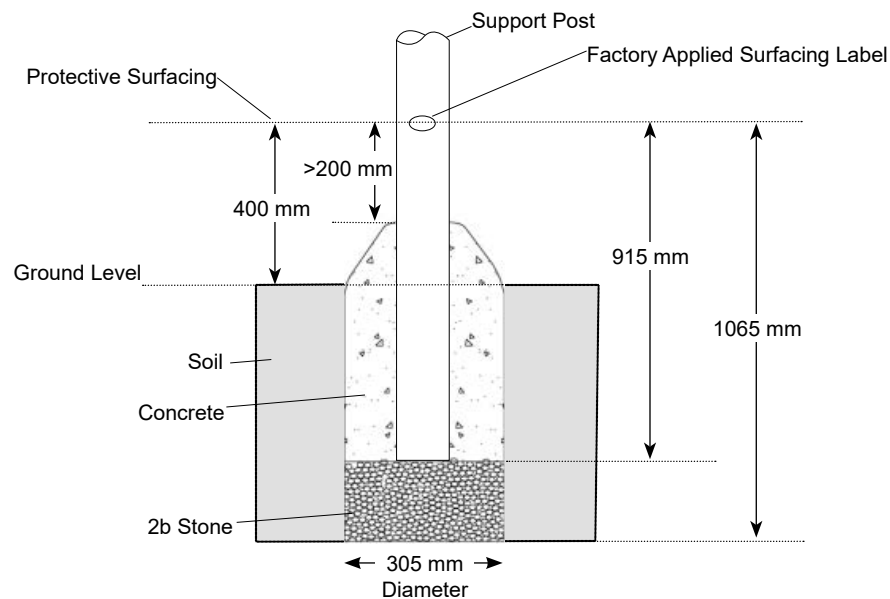
ASTM F1487: 60" (1524 mm)
CSA-Z614: 1524 mm
EN1176: 1524 mm



Installation Instructions



Anchor Post Footing Detail (ASTM/CSA)



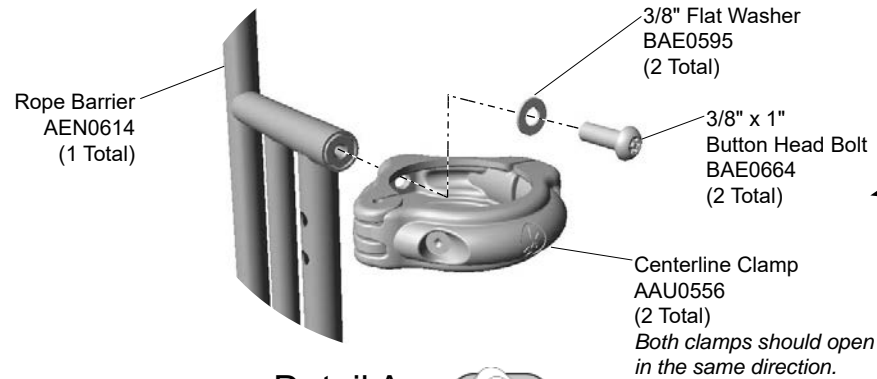
Footing Detail Anchor Post (EN)

FOOTING NOTES

- Anchor post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone or porous block.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

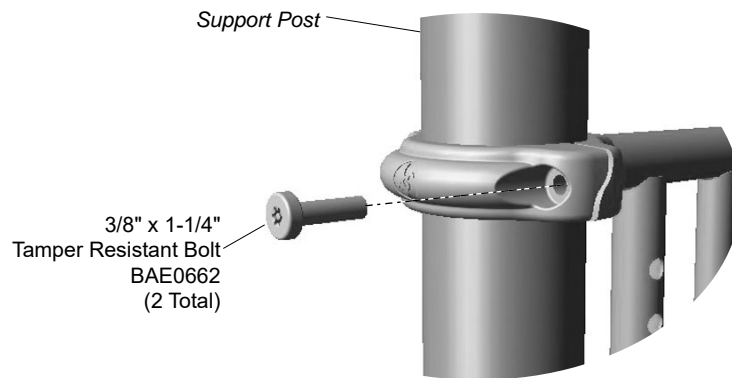
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 12.



Detail A
Step 4

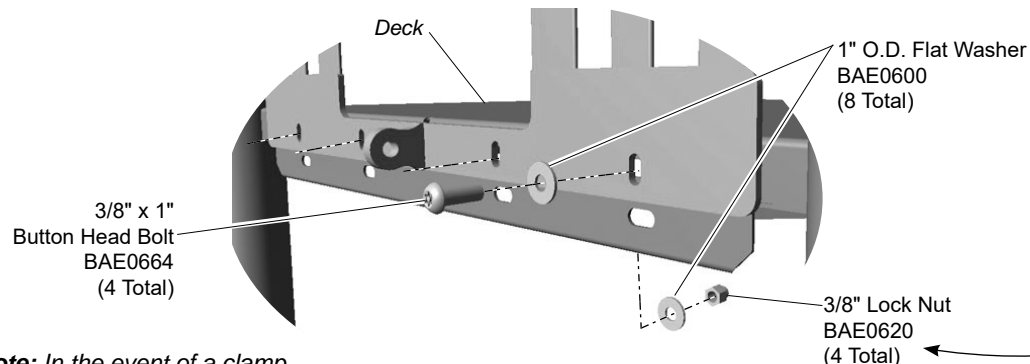
Attach the clamps to the rope barrier.



Detail B
Step 5

Attach the rope barrier to the support posts.

Installation Instructions



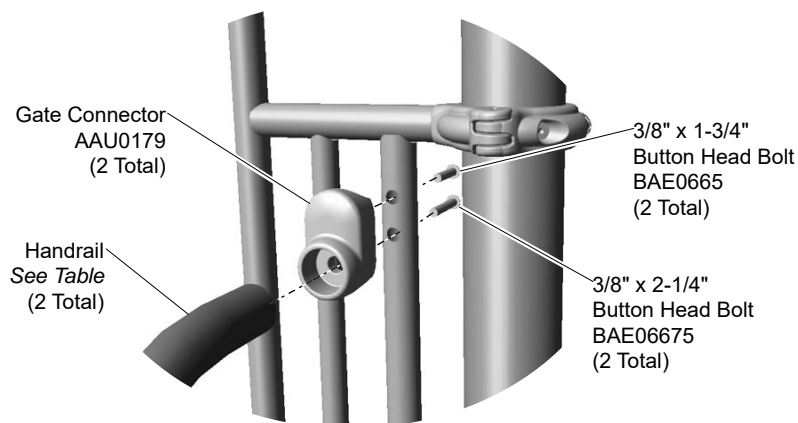
Note: In the event of a clamp conflict the barrier may be attached to the bottom holes in the deck.



Detail C Step 6

Attach the rope barrier to the deck.

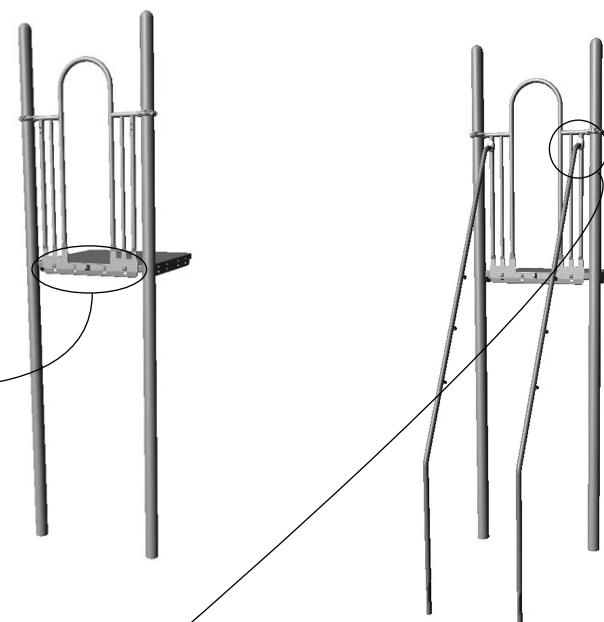
Model	Deck Height	Handrail Part Number
CH7217	36 in. (914 mm)	AFR1615
CH7218	48 in. (1219 mm)	AFR1616
CH7219	60 in. (1524 mm)	AFR1617



Detail D-1 - Rope barrier attached to the upper holes in the deck.

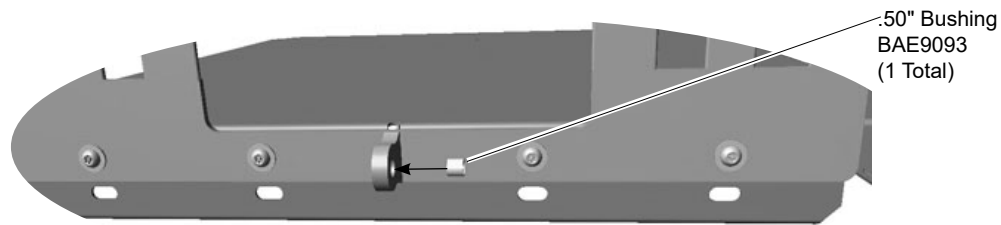
Details D-1 and D-2 Step 7

Attach the handrails to the rope barrier.

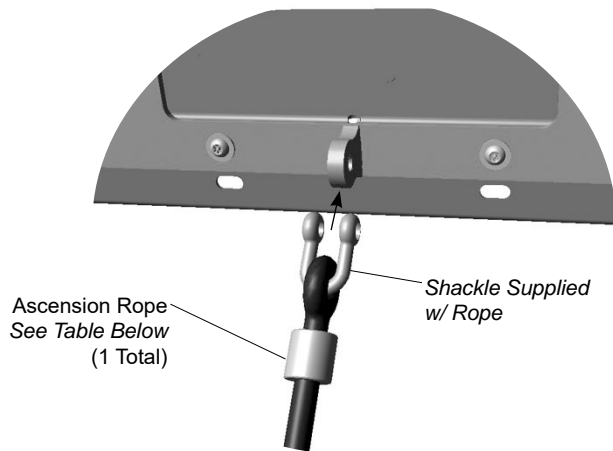


Detail D-2 - Rope barrier attached to the lower holes in the deck.

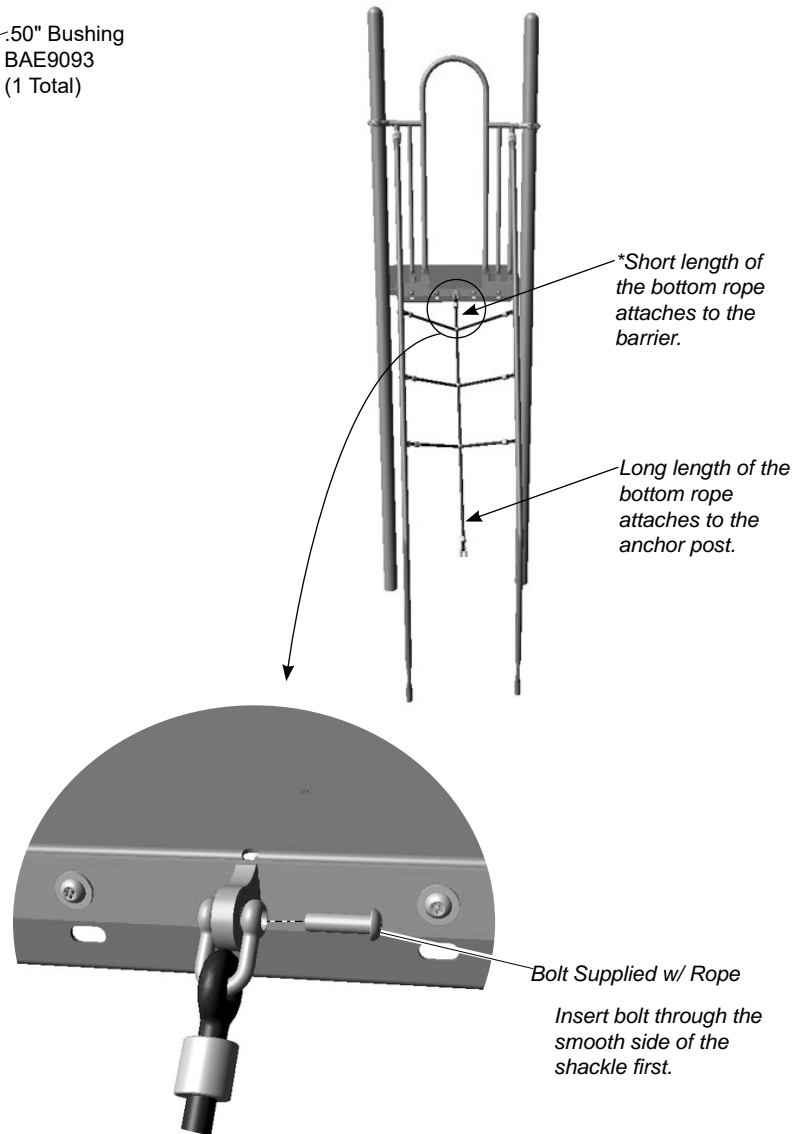
Installation Instructions



Detail E-1 - Insert the bushing into the rope barrier mounting tab.



Detail E-2 - Place the shackle on the *short length of the bottom rope over the rope barrier mounting tab.



Detail E-3 - Attach the rope to the rope barrier mounting tab.

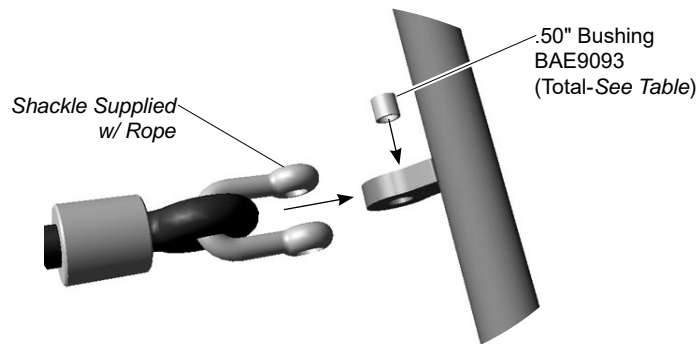
Model	Deck Height	Rope Part Number
CH7217	36 in. (914 mm)	AMC0651
CH7218	48 in. (1219 mm)	AMC0653
CH7219	60 in. (1524 mm)	AMC0655

Details E-1, E-2 and E-3 Step 8

Attach the rope to the rope barrier.

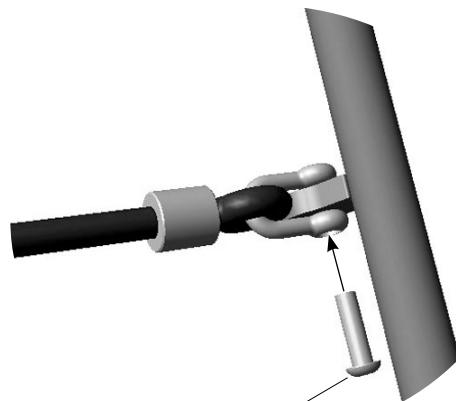


Installation Instructions



Model	Rope Part Number	Number of Bushings
CH7217	AMC0651	4
CH7218	AMC0653	6
CH7219	AMC0655	8

Detail F-1 - Insert a bushing into each mounting tab on the handrails and then place a rope shackle over each tab.



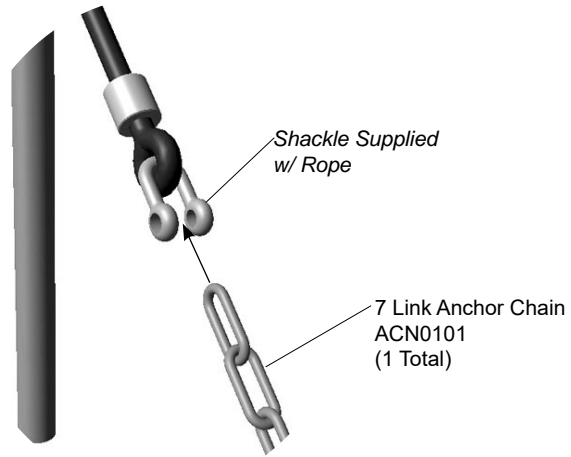
Detail F-2 - Attach the rope to the handrail mounting tab.



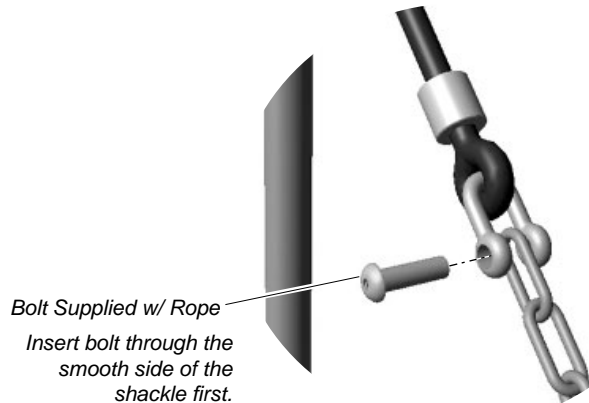
Details F-1 and F-2
Step 9
Attach the rope to the handrails.



Installation Instructions



Detail G-1 - Insert the last link on one end of the chain between the rope shackle.



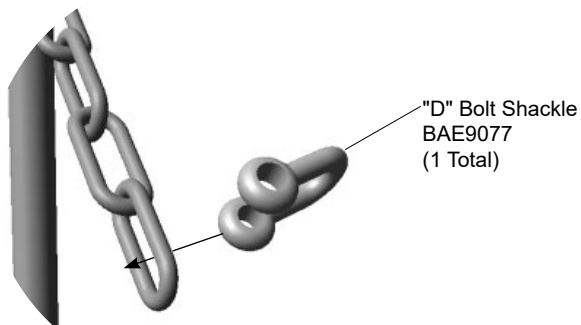
Detail G-2 - Attach the chain to the rope shackle.

Details G-1 and G-2
Step 10

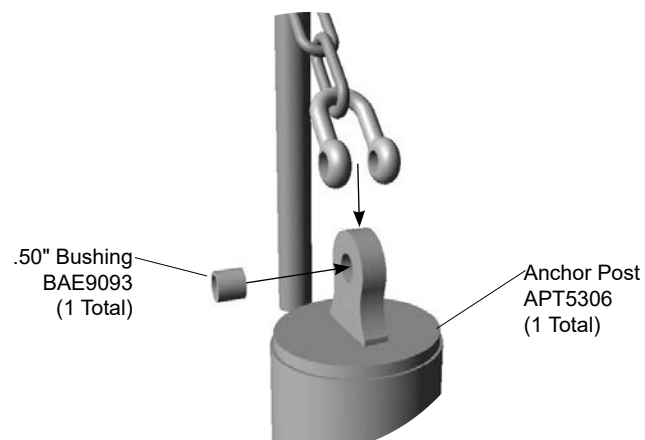
Attach the anchor chain to the rope.



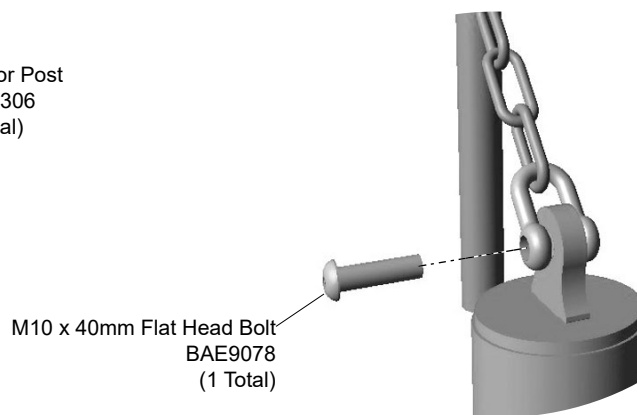
Installation Instructions



Detail H-1 - Insert a bolt shackle through the last link on the other end of the chain.



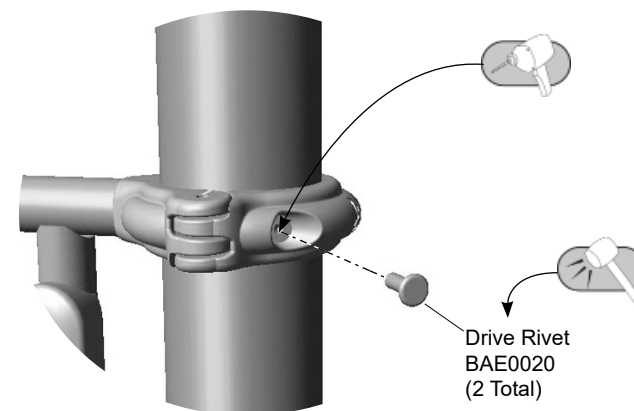
Detail H-2 - Insert a bushing into the mounting tab on the anchor post.



Detail H-3 - Attach the chain to the anchor post.

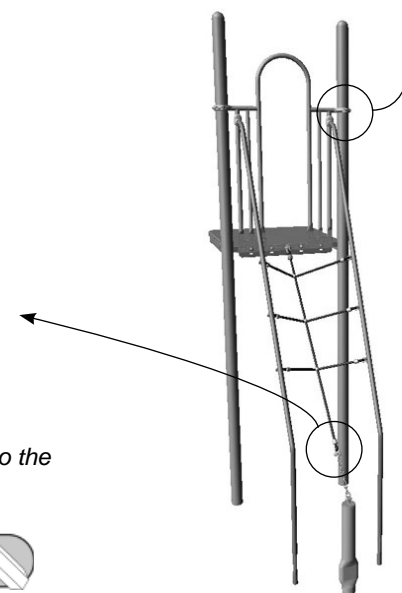
Details H-1, H-2 and H-3
Step 11

Attach the anchor chain to the anchor post.



Detail I
Step 13

Secure the clamps to the support posts.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate the footings as shown in the **Anchor Post Footing Detail** on **page 5** of this document.

Step 4: Attach the clamps to the rope barrier. See **Detail A**. Position a clamp against each side of the barrier top rail and attach as shown. Ensure both clamps open in the same direction. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 5: Attach the rope barrier to the support posts. See **Detail B**. Position the barrier against the deck and close the clamps around the support post. Ensure the mounting tab on the bottom of the barrier is to the outside, and attach as shown.

Step 6: Attach the rope barrier to the deck. See **Detail C**. Align the holes in the bottom of the barrier with the deck holes and attach as shown.

Note: In the event of a clamp conflict the barrier may be attached to the bottom holes in the deck.

Step 7: Attach the handrails to the rope barrier. See **Details D-1 and D-2**. Place the handrails in their footings and against the barrier, and attach as shown.

Step 8: Attach the rope to the rope barrier. See **Details E-1, E-2 and E-3**. Insert a bushing into the rope barrier mounting tab and place the shackle on the short length of the Ascension bottom rope over the tab, and attach as shown. Fully tighten the connection.

Step 9: Attach the rope to the handrails. See **Details F-1 and F-2**. Insert a bushing into each mounting tab on the handrails and then place a rope shackle over each tab, and attach as shown. Fully tighten the connection.

Step 10: Attach the anchor chain to the rope. See **Details G-1 and G-2**. Insert the last link on one end of the chain between the rope shackle, and attach as shown. Fully tighten the connection.

Step 11: Attach the anchor chain to the anchor post. See **Details H-1, H-2 and H-3**. Insert a bolt shackle through the last link on the other end of the chain. Insert a bushing into the mounting tab on the anchor post and place the shackle over the tab. Attach as shown. Fully tighten the connection.

Final Details.

Step 12: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 13: Install drive rivets. See **Detail I**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH7217 - 36 in. (914 mm) ROPE ASCENSION

PART NO.	DESCRIPTION	QTY.
AAU0179	CONNECTOR - 1.315" O.D. GATE ADAPTOR	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACN0101	CHAIN - 5/0 SILVER SHIELD CHAIN - 7 LINKS	1
AEN0614	BARRIER - 30.50" x 57.67" - ROPE	1
AFR1615	HANDRAIL - 108.73" x 35.92" x 1.32"	2
AMC0651	ROPE - 36" ROPE ASCENSION - (CH)	1
APT5306	POST - ROPE CLIMBER GROUND TO DECK	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	2
BAE06675	BOLT - 3/8"-16 x 2-1/4" BUTTON HEAD - SS	2
BAE9077	"D" STYLE SHACKLE	1
BAE9078	BOLT - M10 x 1.5 x 40mm FLAT HEAD	1
BAE9093	BUSHING - .399" I.D. x .56" O.D. x .50"	6

CH7218 - 48 in. (1219 mm) ROPE ASCENSION

PART NO.	DESCRIPTION	QTY.
AAU0179	CONNECTOR - 1.315" O.D. GATE ADAPTOR	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACN0101	CHAIN - 5/0 SILVER SHIELD CHAIN - 7 LINKS	1
AEN0614	BARRIER - 30.50" x 57.67" - ROPE	1
AFR1616	HANDRAIL - 120.71" x 47.92" x 1.32"	2
AMC0653	ROPE - 48" ROPE ASCENSION - (CH)	1
APT5306	POST - ROPE CLIMBER GROUND TO DECK	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	2
BAE06675	BOLT - 3/8"-16 x 2-1/4" BUTTON HEAD - SS	2
BAE9077	"D" STYLE SHACKLE	1
BAE9078	BOLT - M10 x 1.5 x 40mm FLAT HEAD	1
BAE9093	BUSHING - .399" I.D. x .56" O.D. x .50"	8

CH7219 - 60 in. (1524 mm) ROPE ASCENSION

PART NO.	DESCRIPTION	QTY.
AAU0179	CONNECTOR - 1.315" O.D. GATE ADAPTOR	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACN0101	CHAIN - 5/0 SILVER SHIELD CHAIN - 7 LINKS	1
AEN0614	BARRIER - 30.50" x 57.67" - ROPE	1
AFR1617	HANDRAIL - 132.73" x 59.92" x 1.32"	2
AMC0655	ROPE - 60" ROPE ASCENSION - (CH)	1
APT5306	POST - ROPE CLIMBER GROUND TO DECK	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	6
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	2
BAE06675	BOLT - 3/8"-16 x 2-1/4" BUTTON HEAD - SS	2
BAE9077	"D" STYLE SHACKLE	1
BAE9078	BOLT - M10 x 1.5 x 40mm FLAT HEAD	1
BAE9093	BUSHING - .399" I.D. x .56" O.D. x .50"	10



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Assembly View (representative model)

Model	Deck Height
ZZCH7948	24" (610 mm)
ZZCH7949	36" (915 mm)
ZZCH7950	48" (1220 mm)
ZZCH7956	60" (1525 mm)
ZZCH7957	72" (1830 mm)

Installation Instructions

Challengers® Models CH7948, CH7949,
CH7950, CH7956, and CH7957


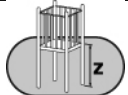

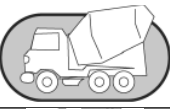
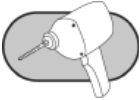


Silo Climber

24 in (610 mm), 36 in (914 mm), 48 in (1219 mm),
60 in (1524 mm), 72 in (1829 mm) Deck

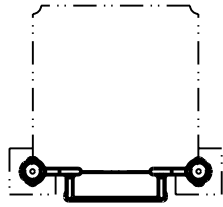
Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time: 2 man-hours
 Concrete Required: 0.06 cubic yard (0,04 cubic meters)
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

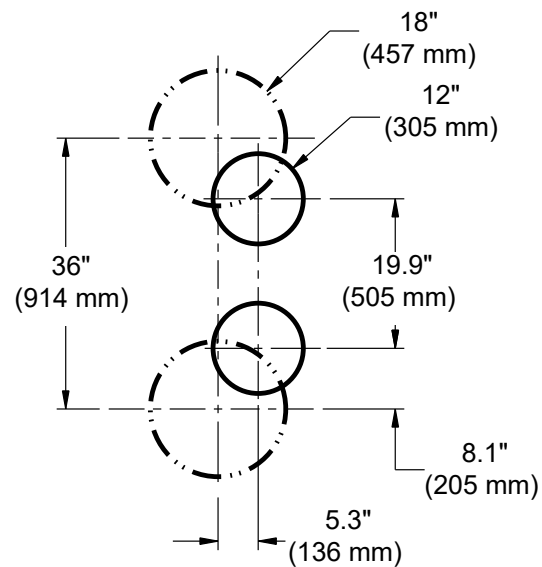
ICON KEY

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	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

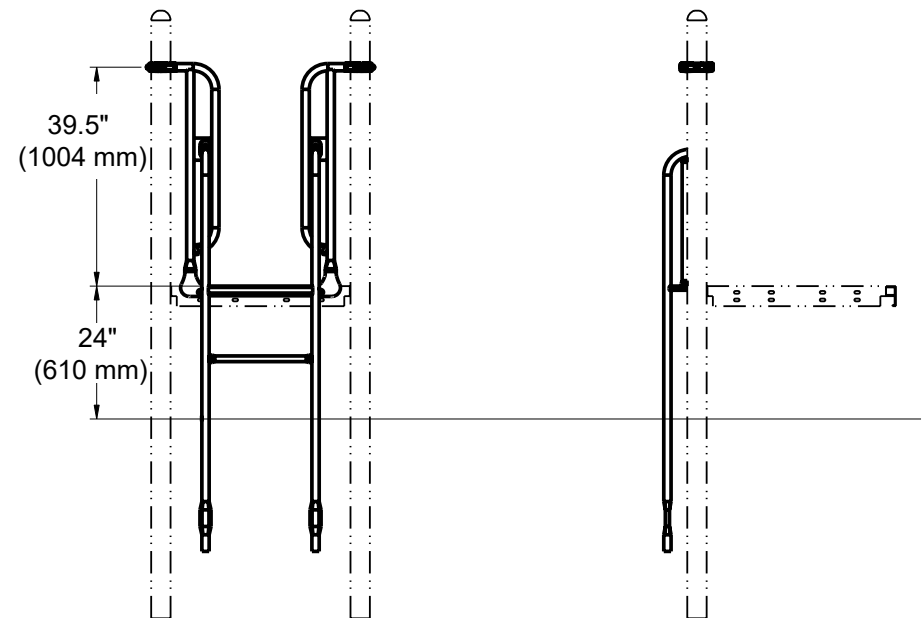
Installation Instructions



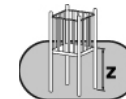
Top View
(All Models)



Footing Diagram
(All Models)

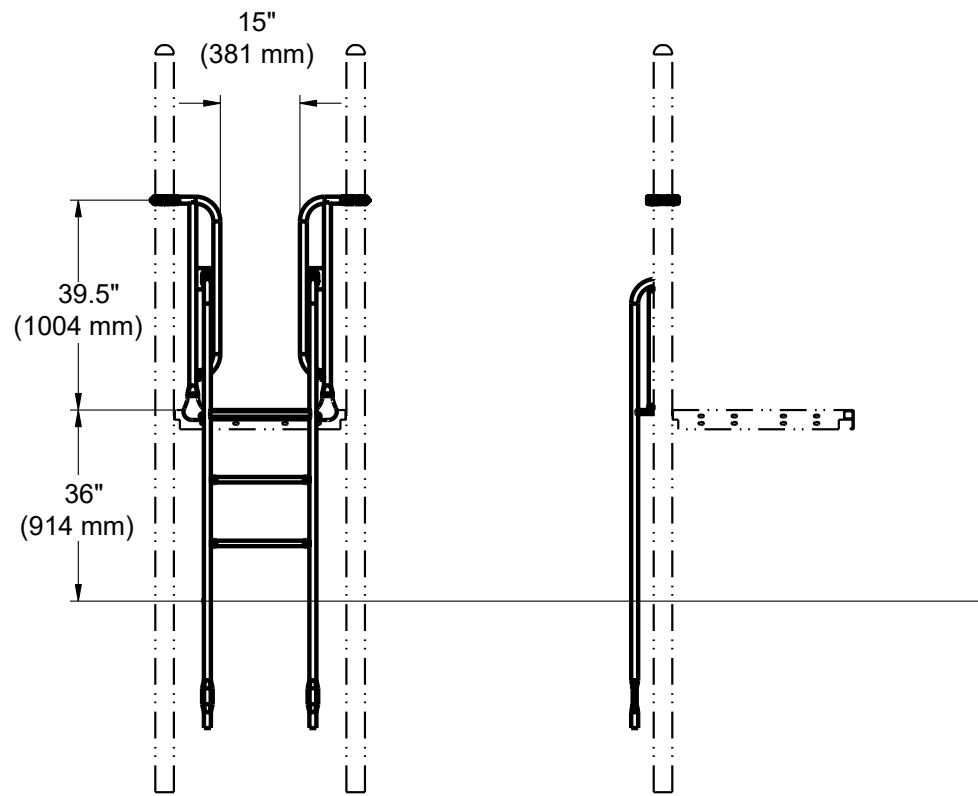


Elevation Views
CH7948

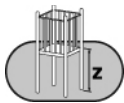


ASTM F1487: 24" (610 mm)
CSA-Z614: 610 mm
EN1176: 610 mm

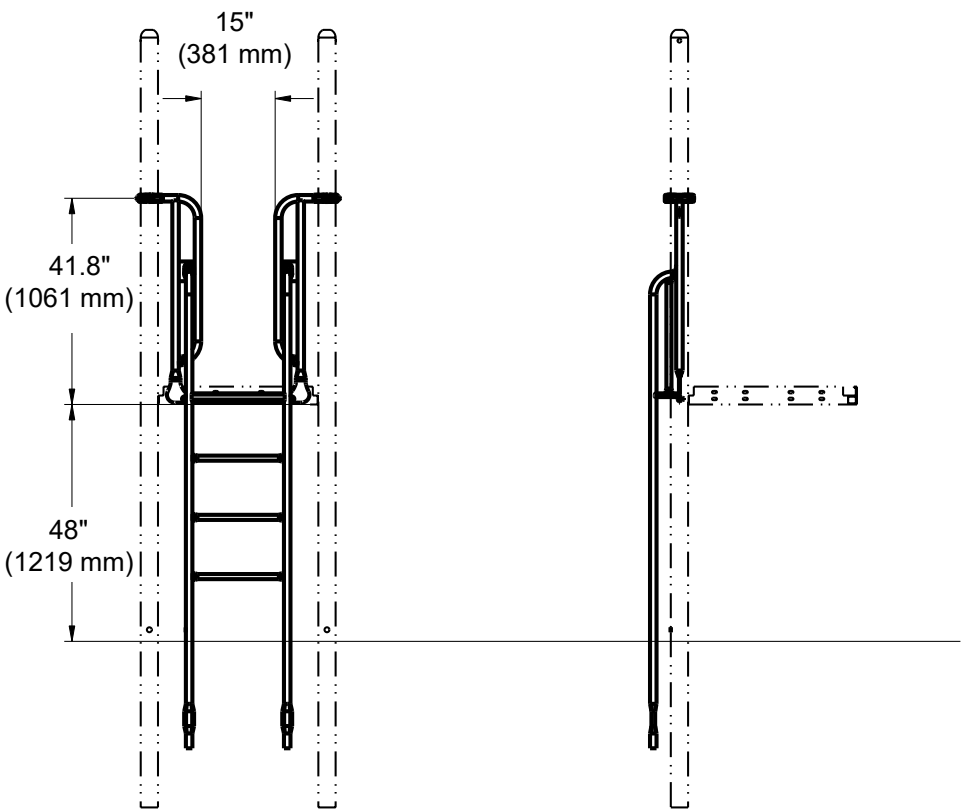
Installation Instructions



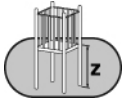
Elevation Views
CH7949



ASTM F1487: 36" (914 mm)
CSA-Z614: 914 mm
EN1176: 914 mm



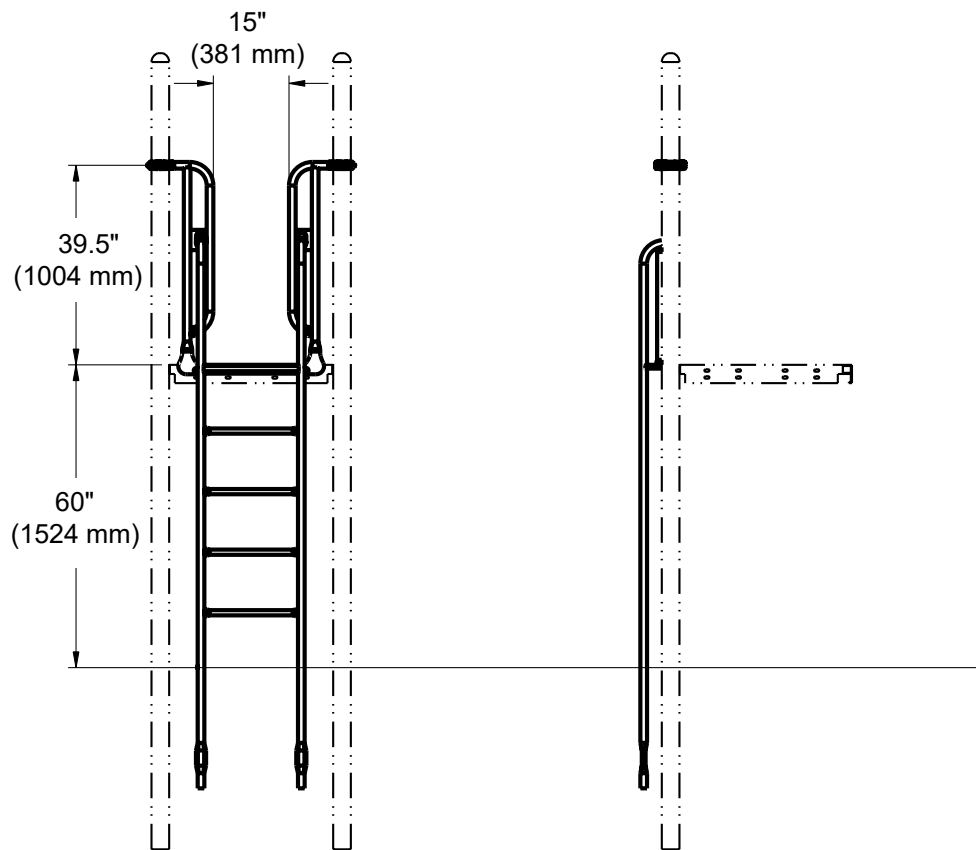
Elevation Views
CH7950



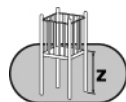
ASTM F1487: 48" (1219 mm)
CSA-Z614: 1219 mm
EN1176: 1219 mm



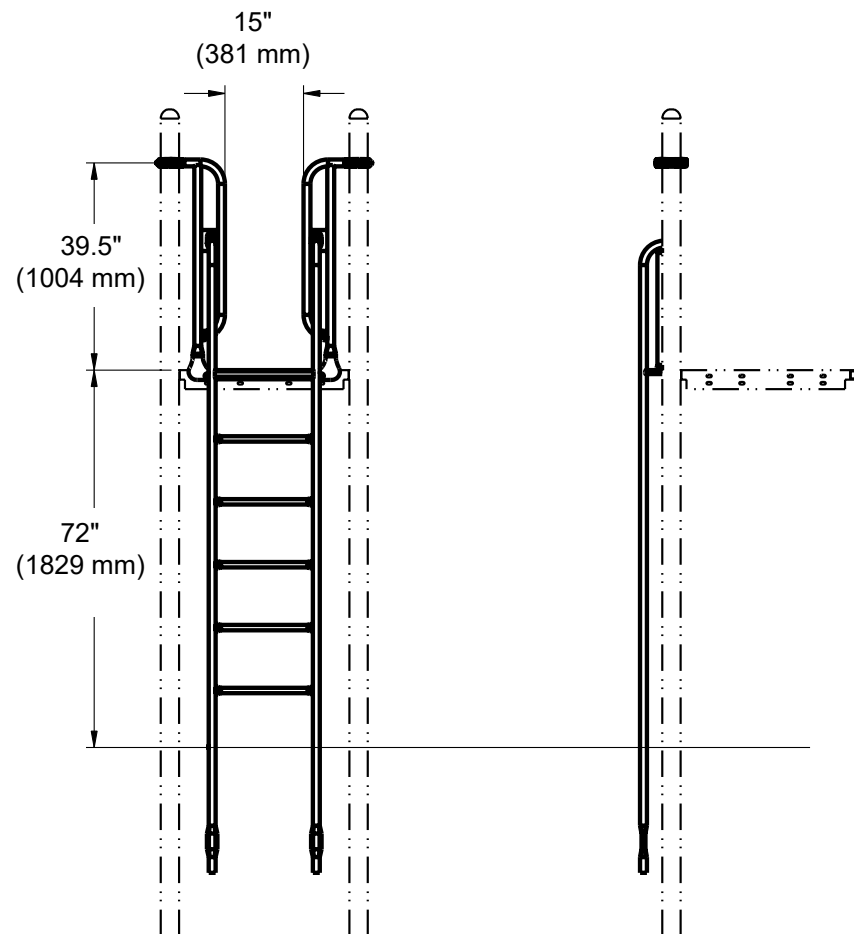
Installation Instructions



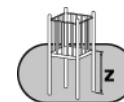
Elevation Views
CH7956



ASTM F1487: 60" (1524 mm)
CSA-Z614: 1524 mm
EN1176: 1524 mm

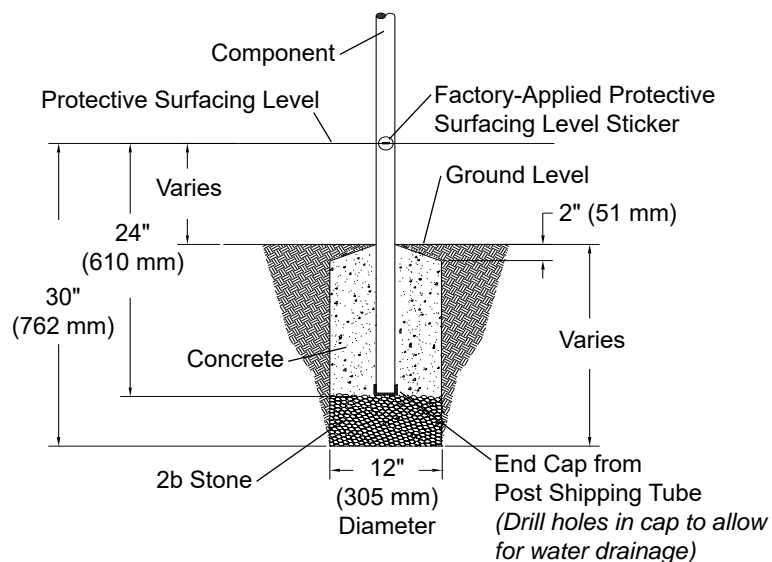


Elevation Views
CH7957



ASTM F1487: 72" (1829 mm)
CSA-Z614: 1829 mm
EN1176: 1829 mm

Installation Instructions



Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.

- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.

- Do not encase bottom of support post in concrete. Place post directly on packed stone.

- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.

For example:

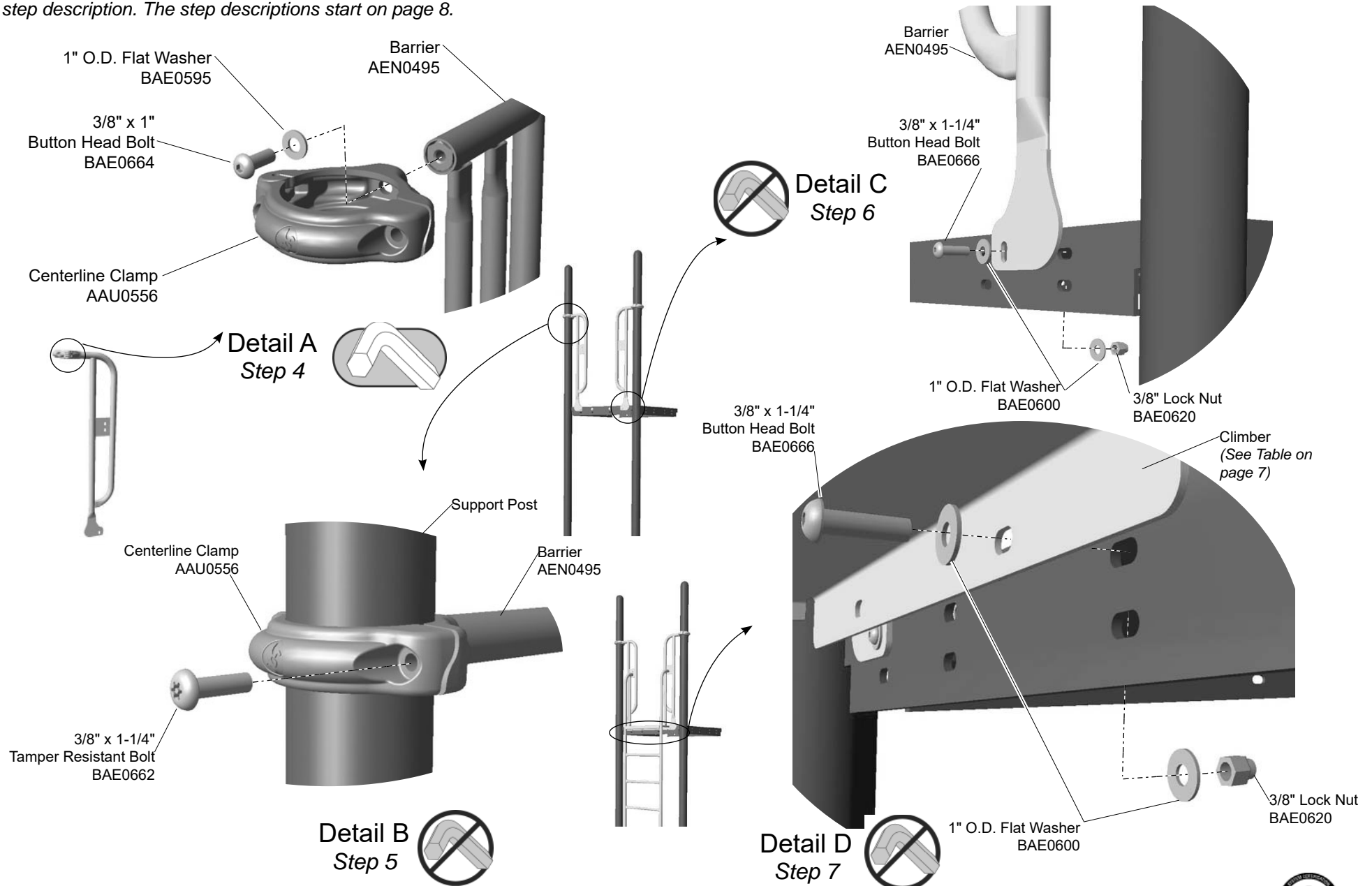
- If local soil is loose or unstable, a larger footing may be required.
- If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.

- Base of footing must be below frost line.

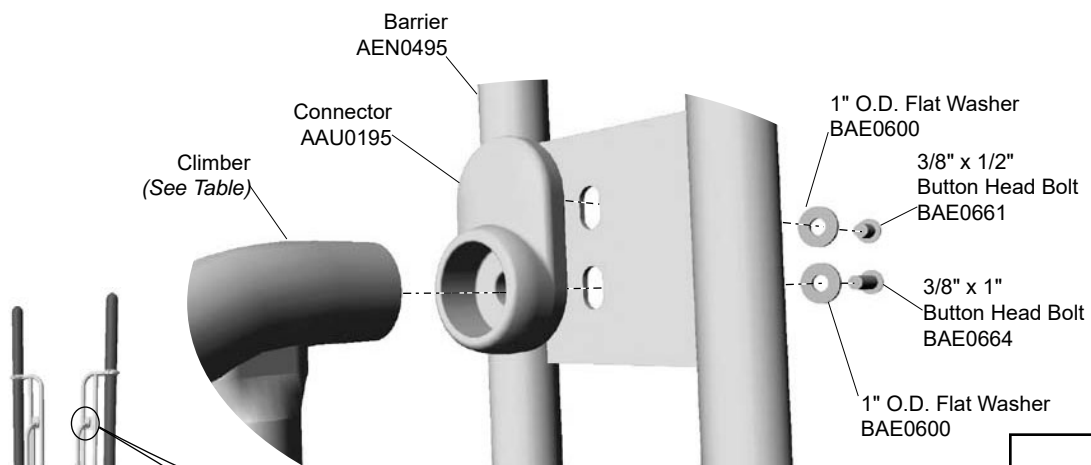
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 8.

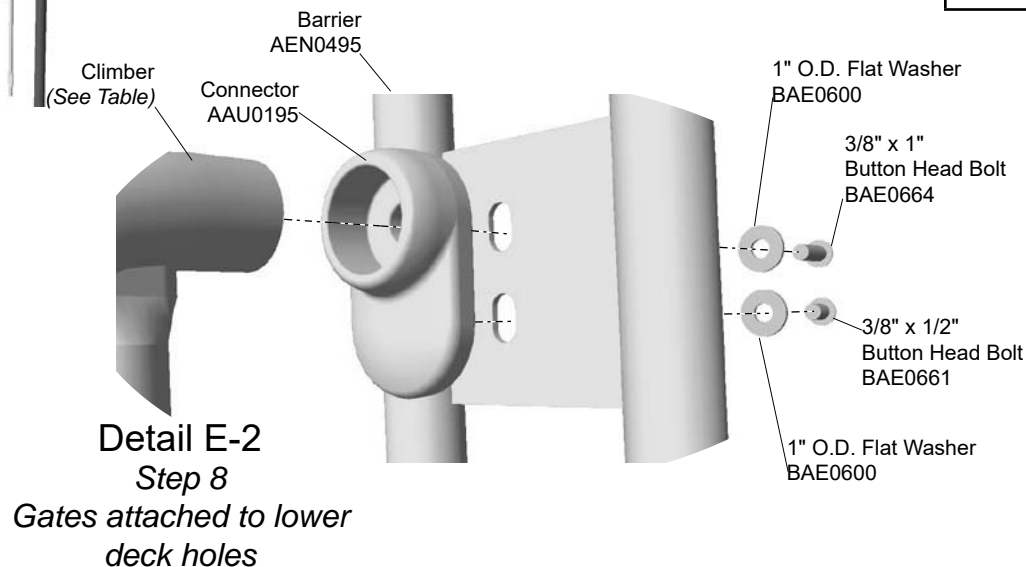


Installation Instructions



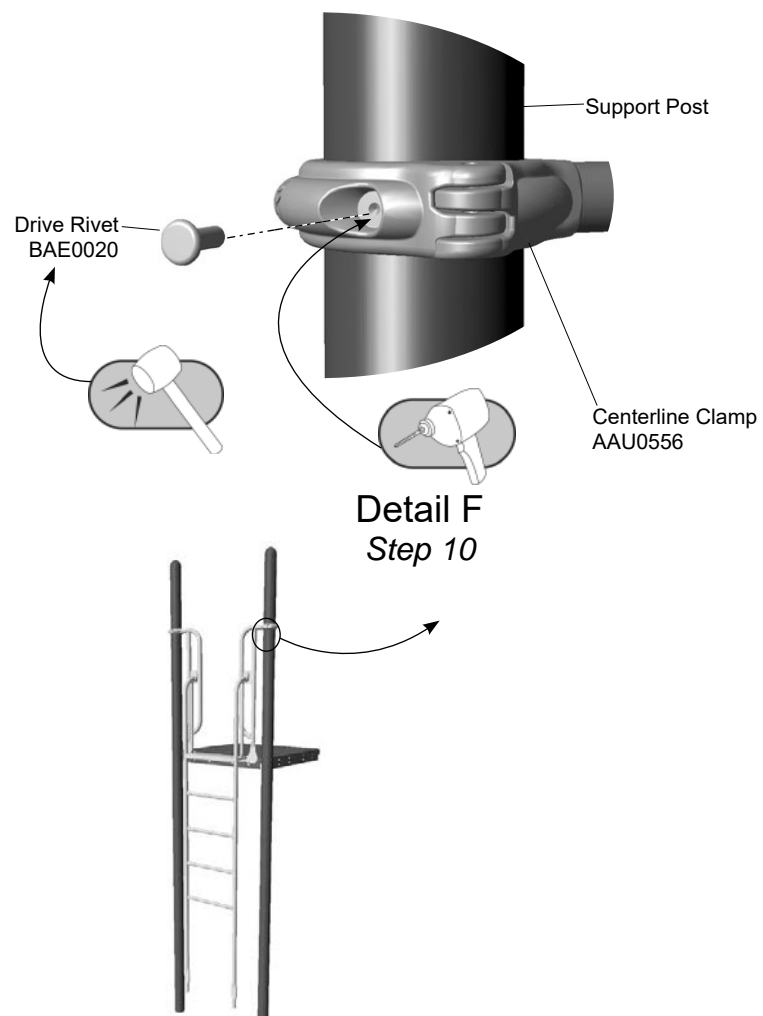
Detail E-1
Step 8
*Gates attached to upper
deck holes*

Model	Part Number	Deck Height
ZZCH7948	ACL0219	24" (610 mm)
ZZCH7949	ACL0220	36" (915 mm)
ZZCH7950	ACL0222	48" (1220 mm)
ZZCH7956	ACL0224	60" (1525 mm)
ZZCH7957	ACL0226	72" (1830 mm)



Detail E-2
Step 8
*Gates attached to lower
deck holes*

Installation Instructions



Installation Instructions

__Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

__Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

__Step 2: Separate and identify all components and hardware.

__Step 3: Excavate footings as shown in the **Component Footing Details** in the Guidelines and on page 5 of this installation document.

Attach the clamps to the barrier gates.

__Step 4: Attach the clamps to the barrier gates. See **Detail A**. Select both barrier gates and (2) two clamps, and the appropriate hardware. Position the top of each barrier against the neck of the clamp and make the connection as shown. Fully tighten connections.

Attach the clamps to the support posts.

__Step 5: Attach the clamps to the support posts. See **Detail B**. Select (2) two 3/8" x 1-1/4" tamper resistant bolts. Lift each barrier gate into position against the deck and attach each clamp to the support post as shown. Leave the connections loose. The location of the clamp may need to be changed.

Attach the barrier gates to the deck.

__Step 6: Attach the barrier gates to the deck. See **Detail C**. Select the appropriate hardware. There are (2) two connections. Align the barrier gates with either the *top* or the *bottom* holes of the deck.

Note: The connectors are adjusted according the the barrier gate location. See **Detail E-1** and **Detail E-2**.

Attach the silo climber to the deck.

__Step 7: Attach the silo climber to the deck. See **Detail D**. Select the appropriate hardware. There are (2) two connections. Place the silo climber onto the prepared footings. Align the silo climber with the *top* deck holes.

Important Note: The top step plate of the silo climber **must** be flush with the top surface of the adjoining deck.

Attach the silo climber to the barrier gate.

__Step 8: Attach the silo climber to the barrier gate. See **Detail E-1** and **Detail E-2**. Select (2) two connectors and the appropriate hardware. There are (4) four connections. **Note:** The connectors are adjusted according the the barrier gate location.

Final Details.

__Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications. Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

__Step 10: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH7948 - 24 in (610 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0219	CLIMBER - 24" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7949 - 36 in (914 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0220	CLIMBER - 36" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7950 - 48 in (1219 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0222	CLIMBER - 48" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DR	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7956 - 60 in (1524 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0224	CLIMBER - 60" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4

CH7957 - 72 in (1829 mm) DECK SILO CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0195	CONNECTOR - 1.315" O.D. GATE	2
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	2
ACL0226	CLIMBER - 72" w/LABEL AT 24"	1
AEN0495	BARRIER - 42.07" x 7.75" GATE w/MOUNTING PLATE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	12
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	4
BAE0661	BOLT - 3/8"-16 x 1/2" BUTTON HEAD - SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TPR RSTNT w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4



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Assembly View (representative model)

Installation Instructions Challengers® Models CH8266, CH8266S, CH8267 and CH8267S Rushmore 48 in. (1219 mm) and 60 in. (1524 mm) Single Flex Tread In-Ground and Surface Mount

Installation Preparation

Recommended Crew: Two (2) adults
 Installation Time (in-ground):..... 3 man-hours
 Installation Time (surface mount): 2 man-hours
 Concrete Required (in-ground): 0.06 cubic yard (0,04 cubic meters)
 Use Zone:..... Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

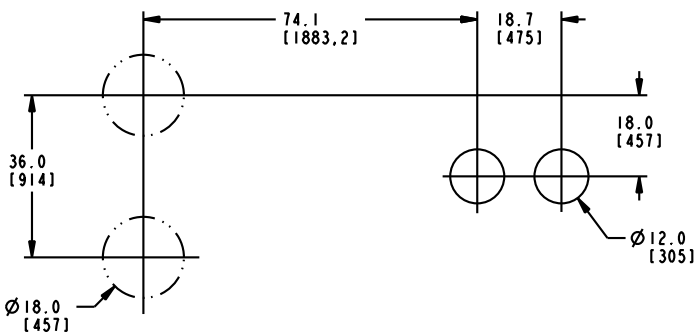
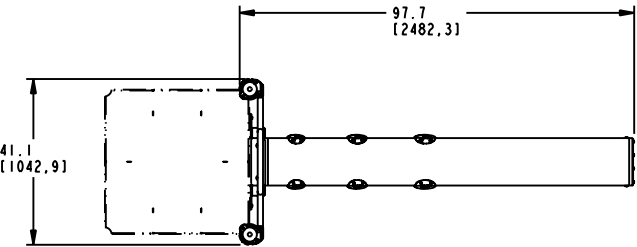
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

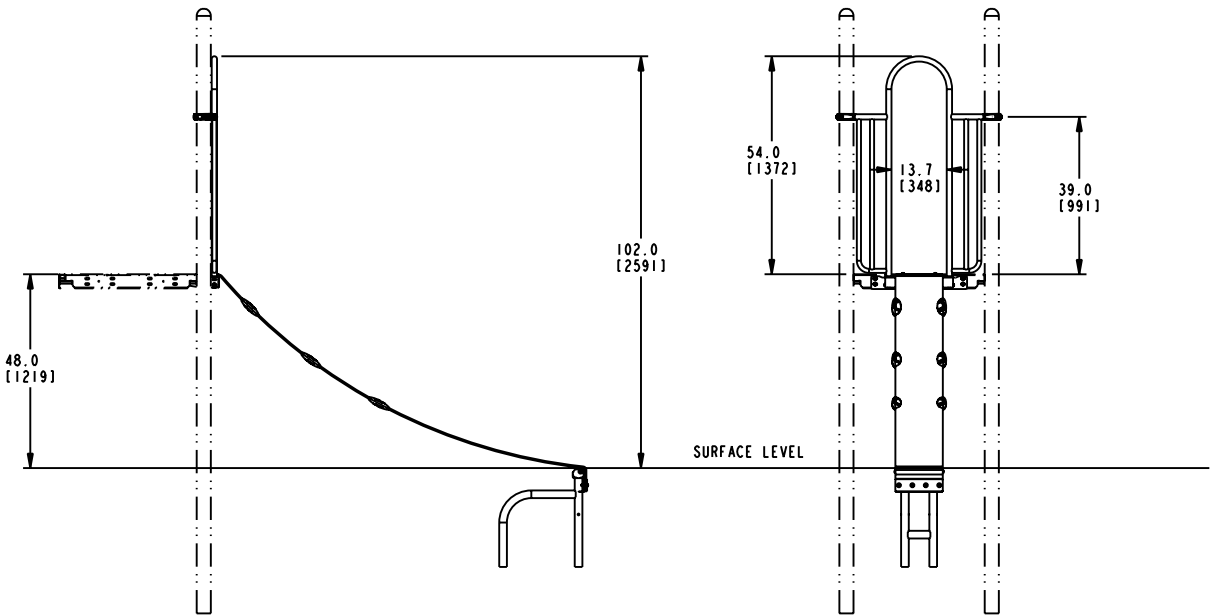
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

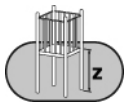
Top View



Footing Diagram



Elevation Views
CH8266

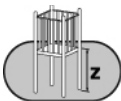
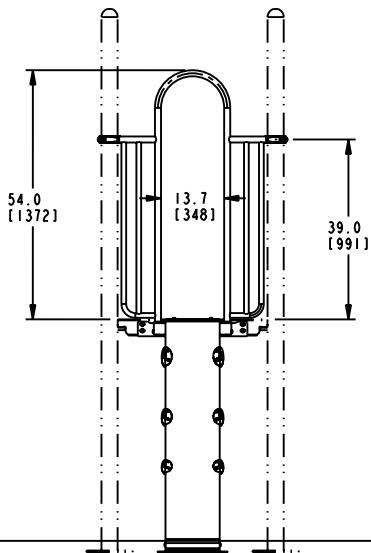
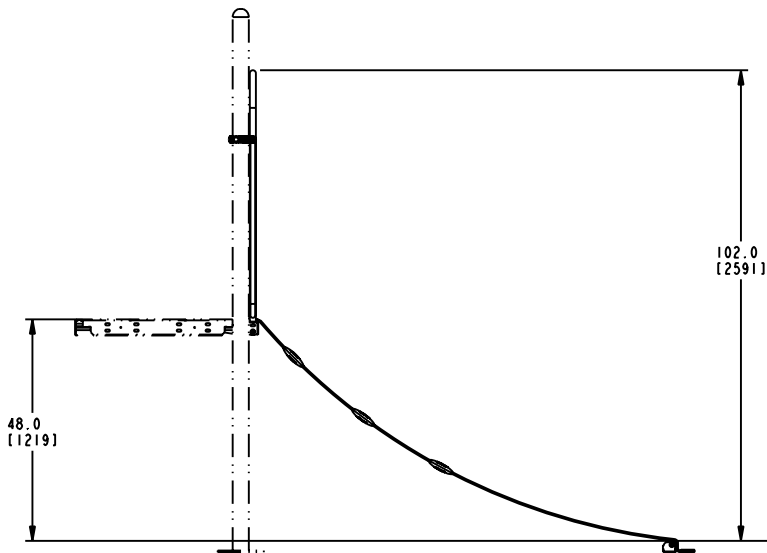
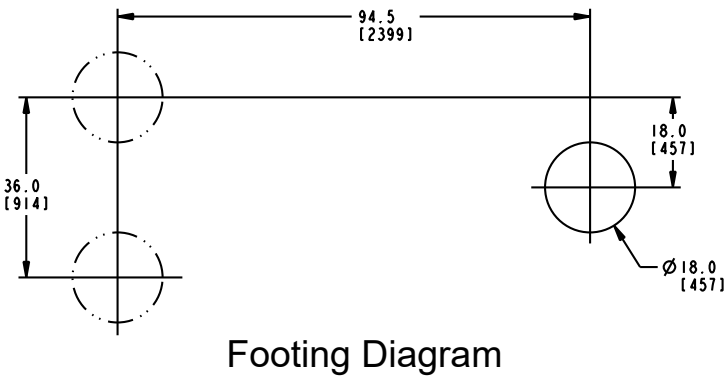
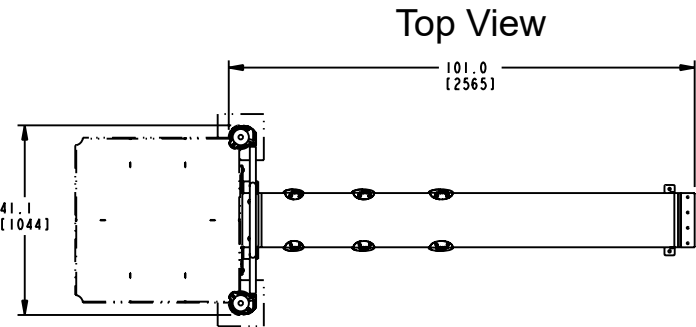


ASTM F1487: 48" (1219 mm)
CSA-Z614: 1219 mm
EN1176: 1219 mm



Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



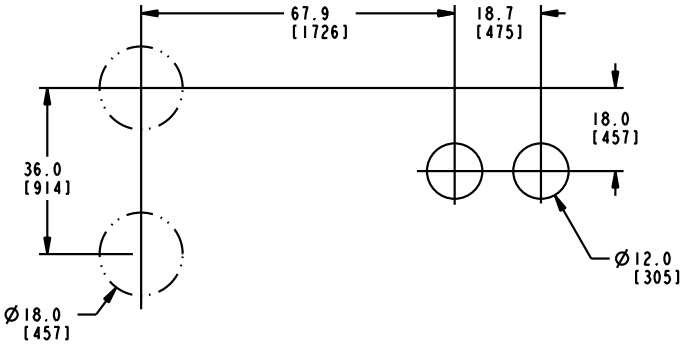
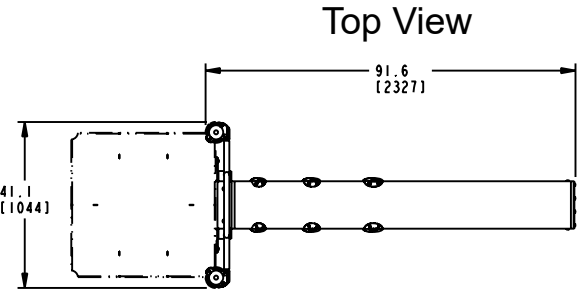
ASTM F1487: 48" (1219 mm)
CSA-Z614: 1219 mm
EN1176: 1219 mm

Elevation Views
CH8266S

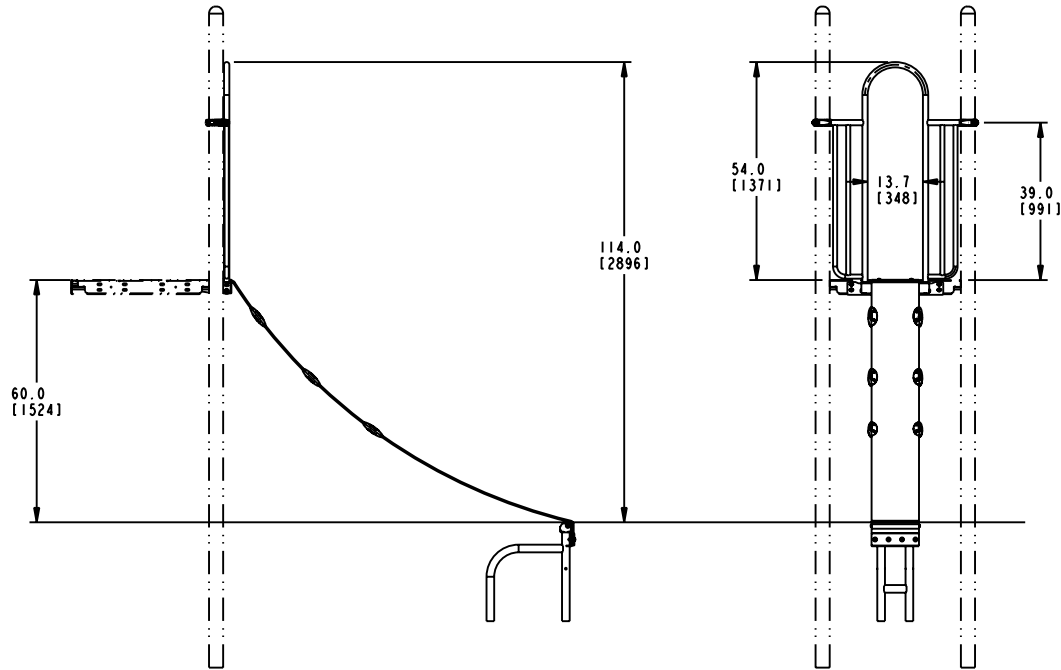


Installation Instructions

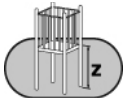
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



Elevation Views
CH8267

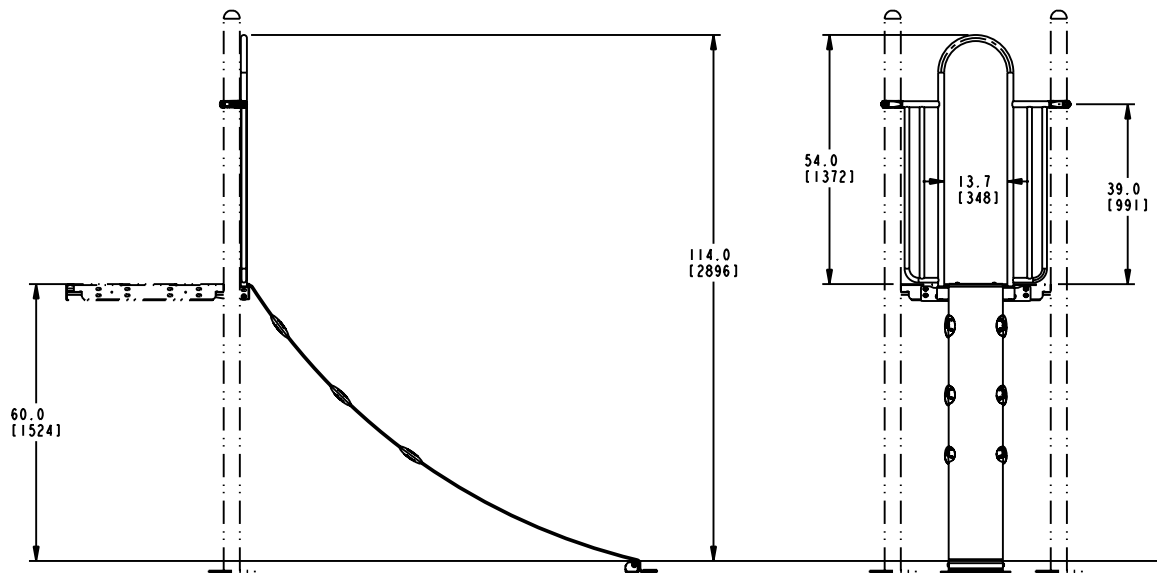
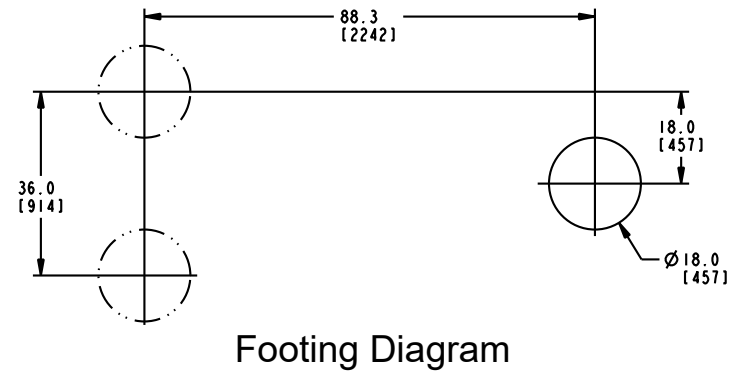
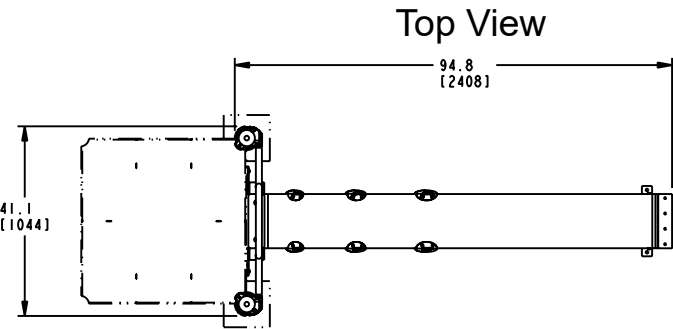


ASTM F1487: 60" (1524 mm)
CSA-Z614: 1524 mm
EN1176: 1524 mm

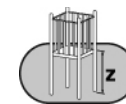


Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



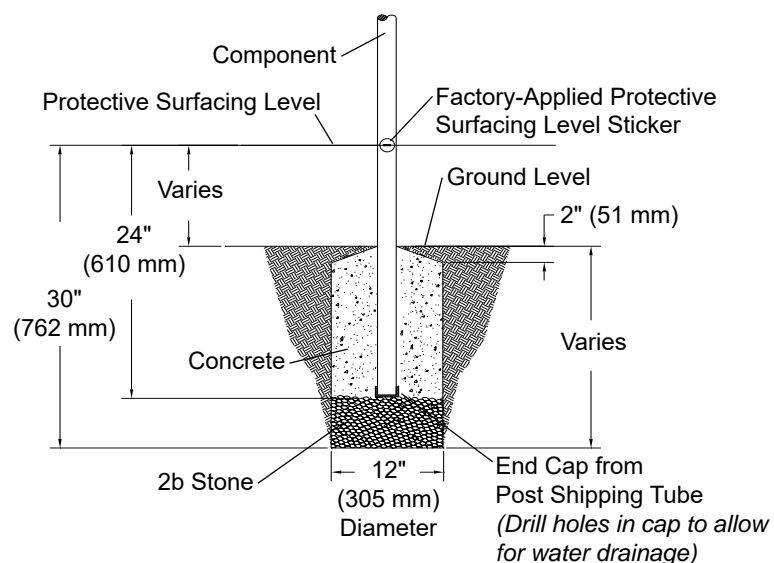
Elevation Views
CH8267S



ASTM F1487: 60" (1524 mm)
CSA-Z614: 1524 mm
EN1176: 1524 mm



Installation Instructions

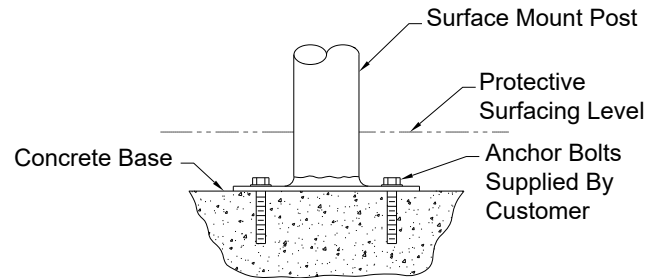


Component Footing Detail (ASTM/CSA)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- Component footing depth equals 30 in. (762 mm) less the depth of the protective surfacing material. The post is designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Some support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone or porous block.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

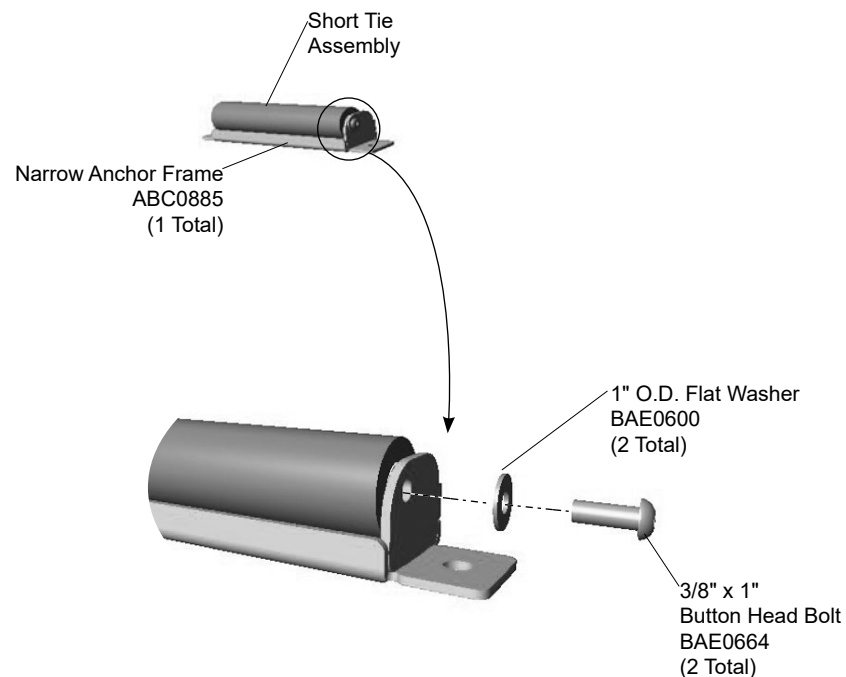
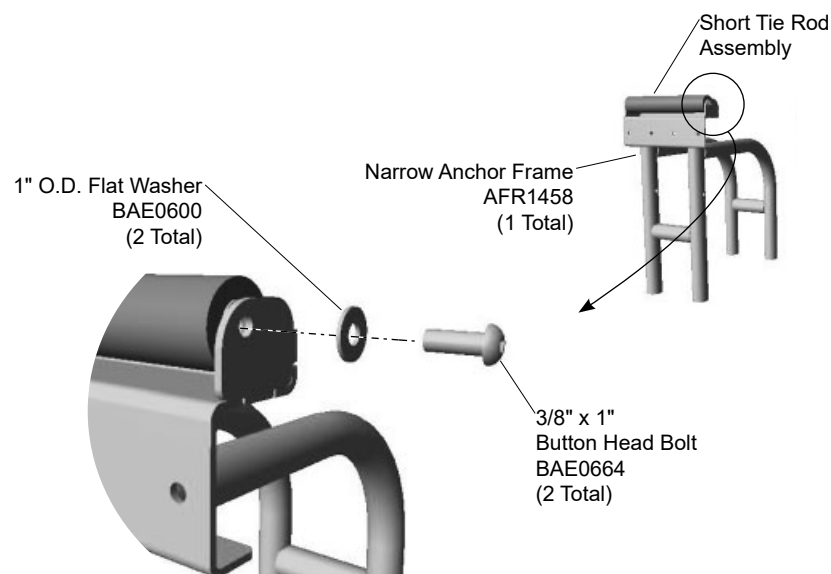
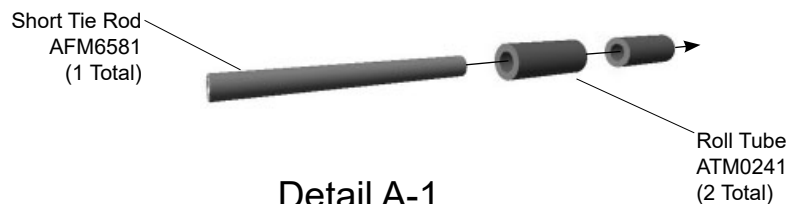
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 16.



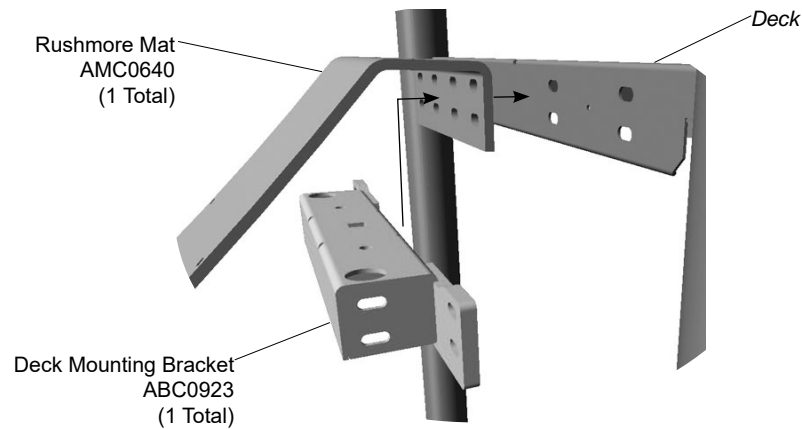
Details A-1 and A-2

Step 4

Assemble and attach the tie rod to the anchor frame.

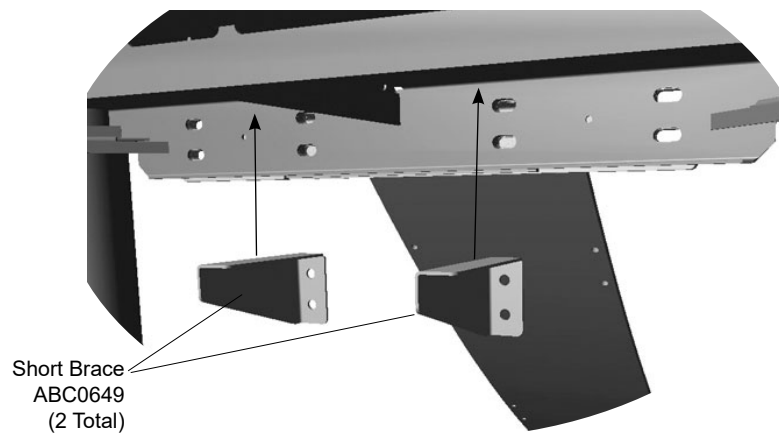


Installation Instructions



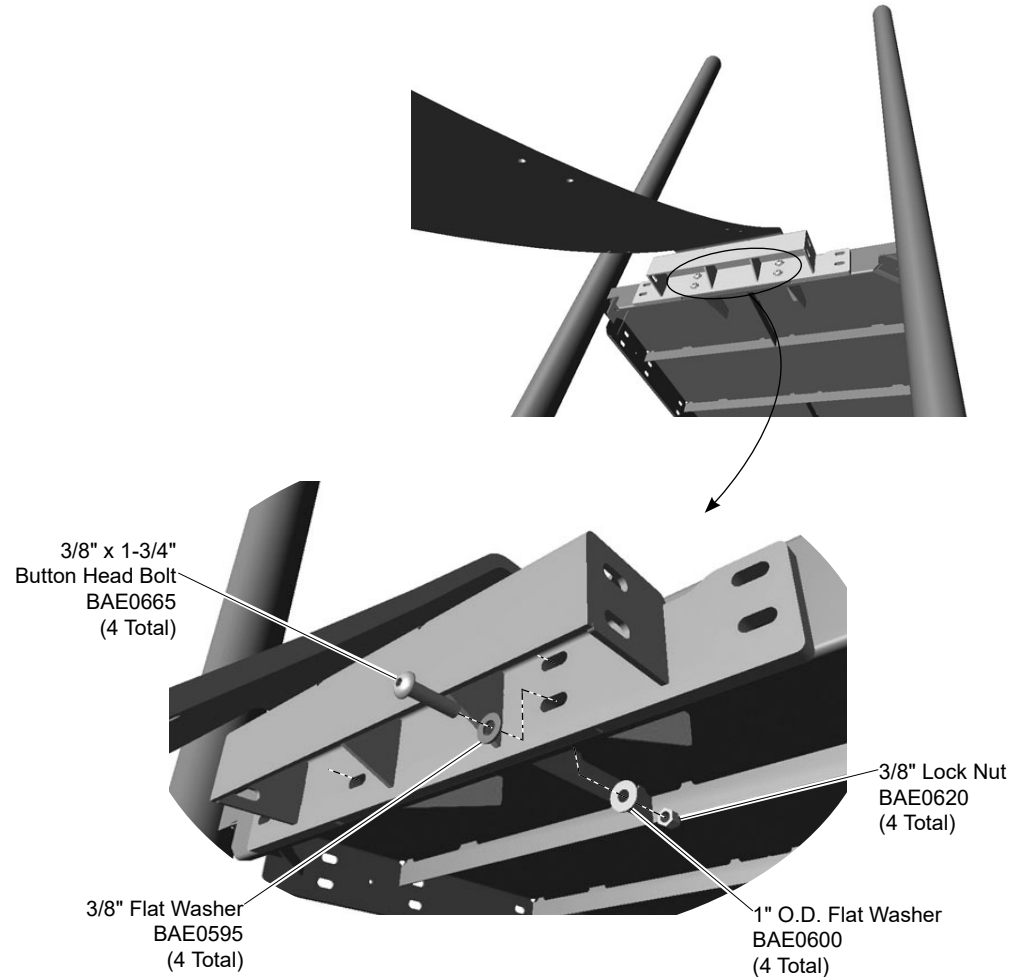
Detail B-1

Position the mat and mounting bracket against the deck with the middle holes aligned in each.



Detail B-2

From underneath the deck position the short braces against the bottom of the deck with the holes in the braces aligned with the middle holes in the deck.



Detail B-3

Attach the mat, the mounting bracket and short braces to the deck.

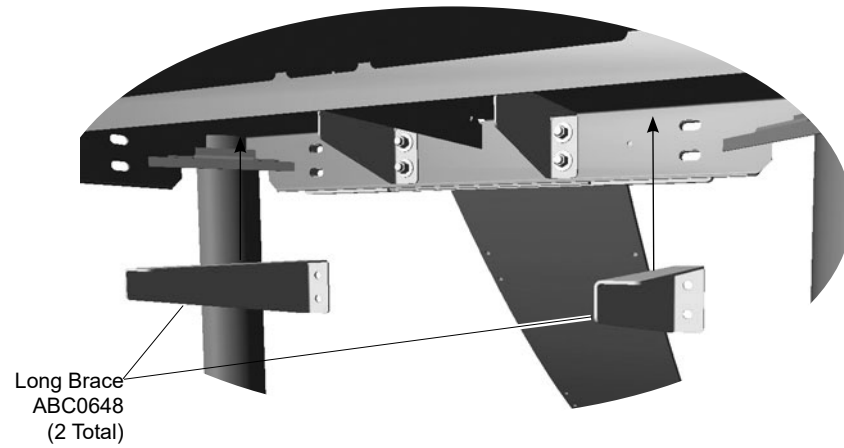
Details B-1, B-2 and B-3

Step 5

Attach the mat to the deck (middle holes connection).

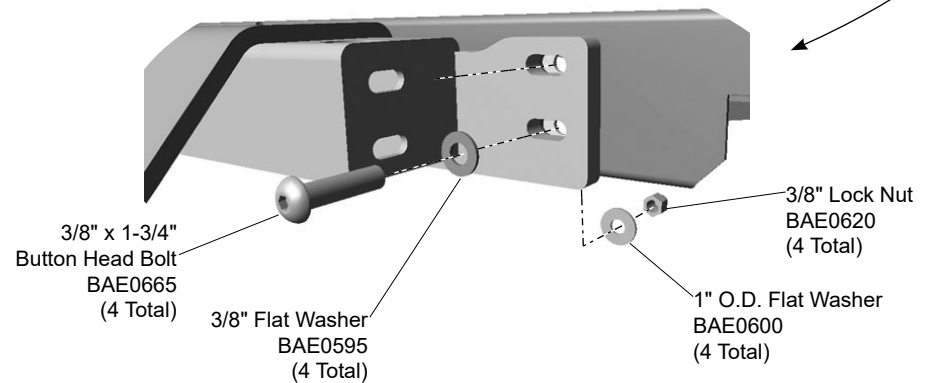


Installation Instructions



Detail C-1

From underneath the deck position the long braces against the bottom of the deck with the holes in the braces aligned with the outer holes in the deck.



Detail C-2

Attach the mounting bracket and long braces to the deck.

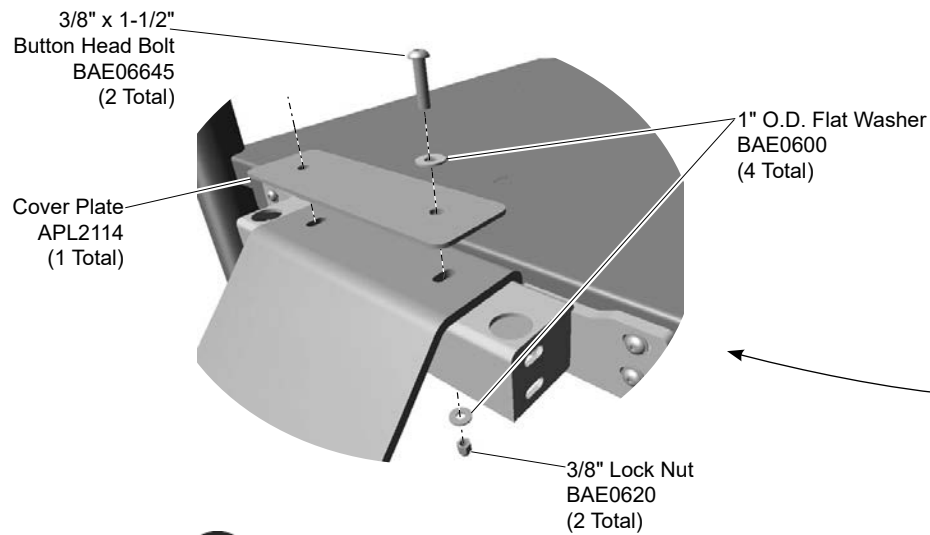
Details C-1 and C-2

Step 6

*Attach the mounting bracket and long braces to the deck
(outer holes connection).*

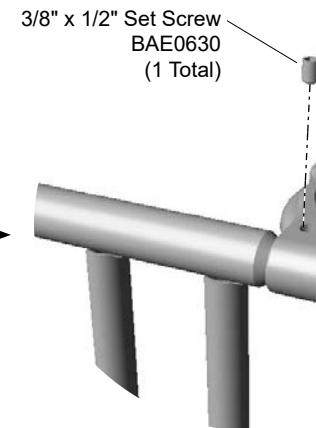
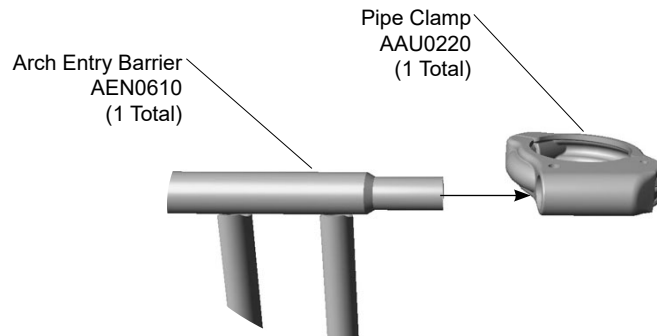
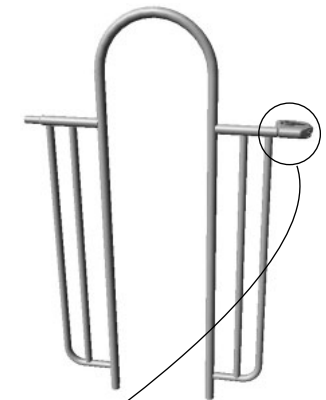


Installation Instructions



Detail D Step 7

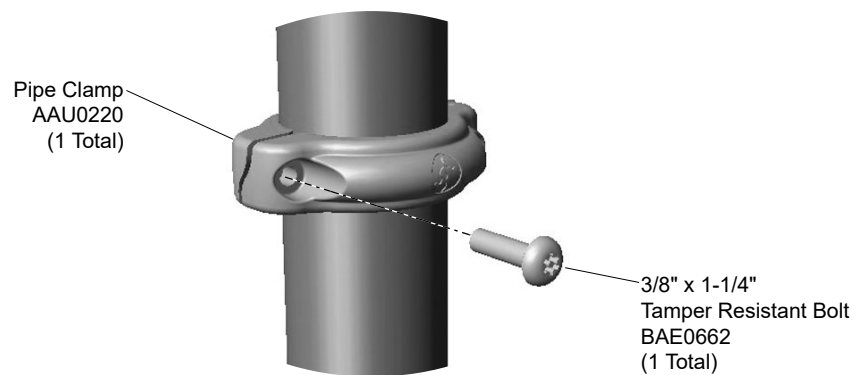
Attach the cover plate to the mat and mounting bracket.



Detail E Step 8

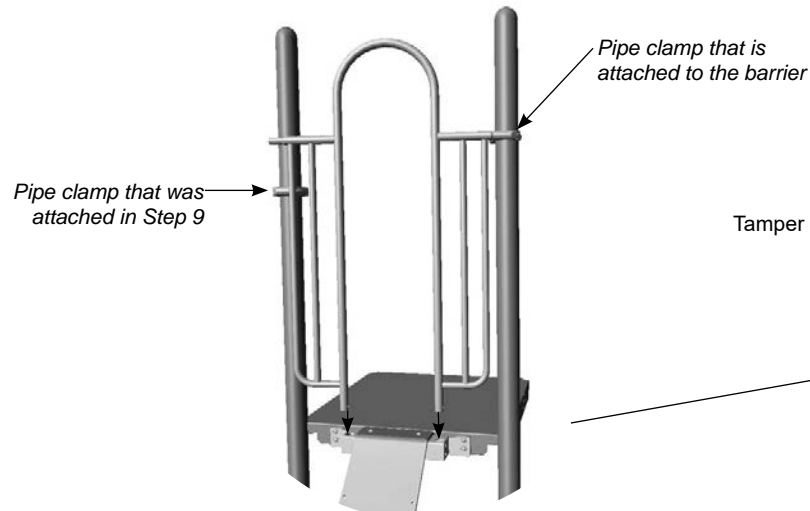
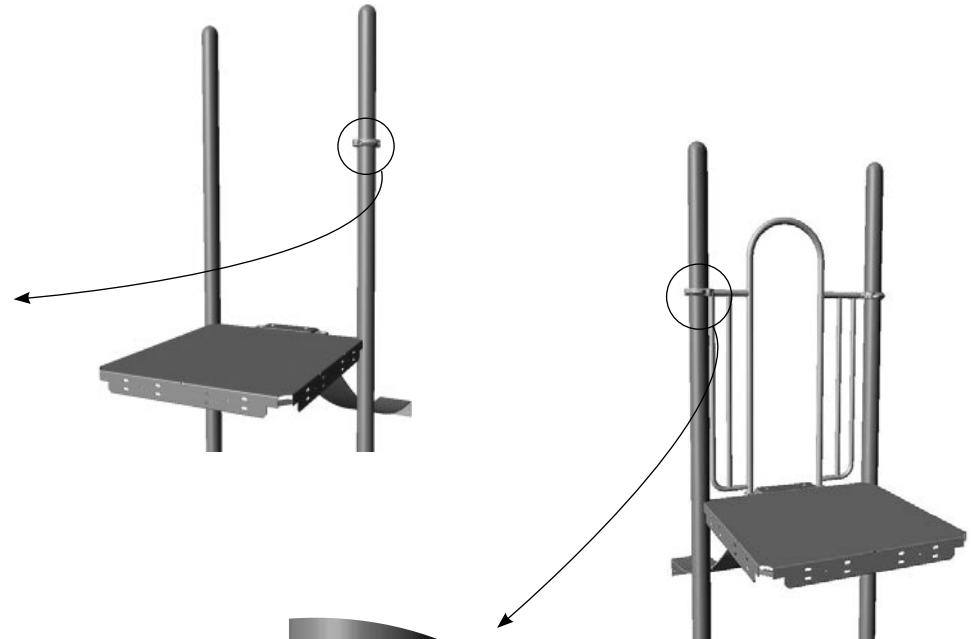
Attach a clamp to one end of the arch entry barrier.

Installation Instructions



Detail F Step 9

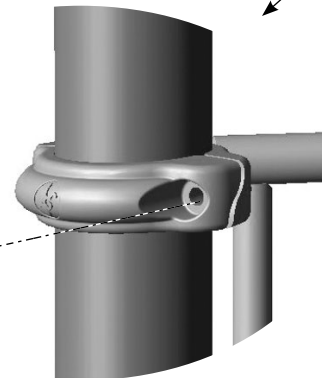
Attach a clamp to opposite support post from which the clamp on the arch entry barrier will be attached.



Detail G-1

Insert the barrier bottom rungs into the deck mounting bracket and close the clamp around the support post.

3/8" x 1-1/4"
Tamper Resistant Bolt
BAE0662
(1 Total)



Detail G-2

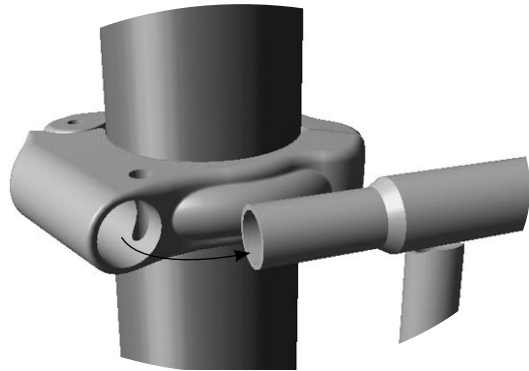
Attach the barrier clamp to the support post.

Details G-1 and G-2 Step 10



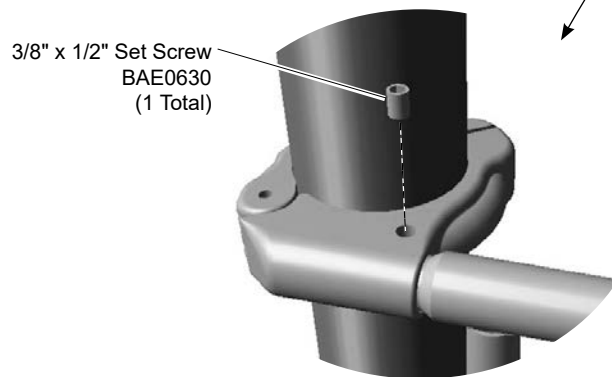
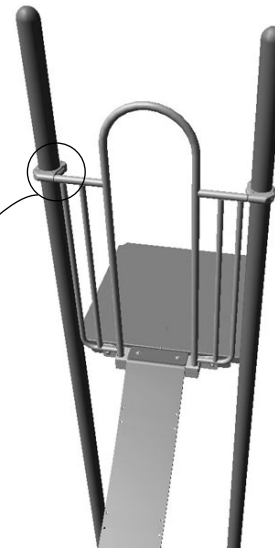
Attach the arch entry barrier to the open support post.

Installation Instructions



Detail H-1

Turn the clamp around to accept the open top rail of the arch entry barrier.



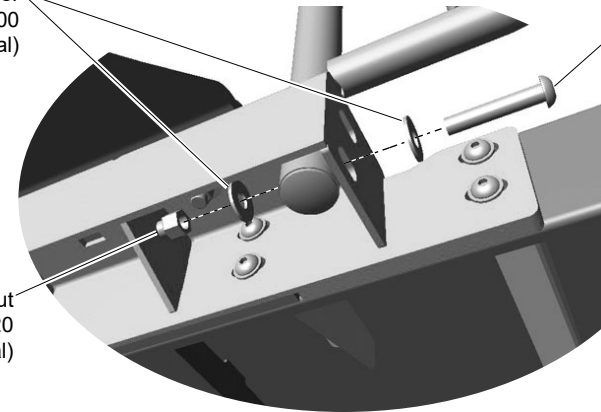
Detail H-2

Attach the clamp to the barrier.

1" O.D. Flat Washer
BAE0600
(4 Total)

3/8" x 2"
Button Head Bolt
BAE06673
(2 Total)

3/8" Lock Nut
BAE0620
(2 Total)



Details H-1 and H-2

Step 11

Attach the arch entry barrier to the clamp on the other support post.



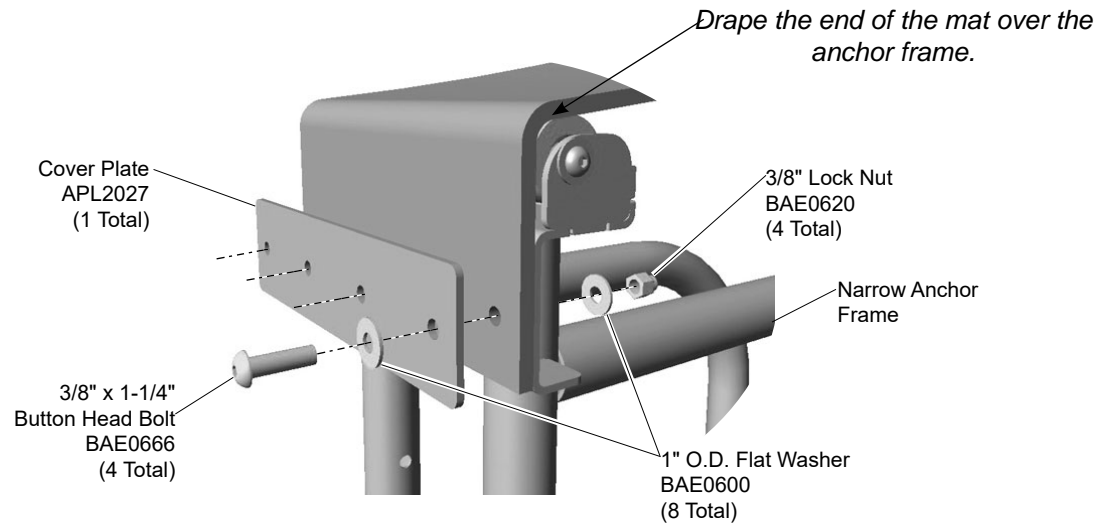
Detail I

Step 12

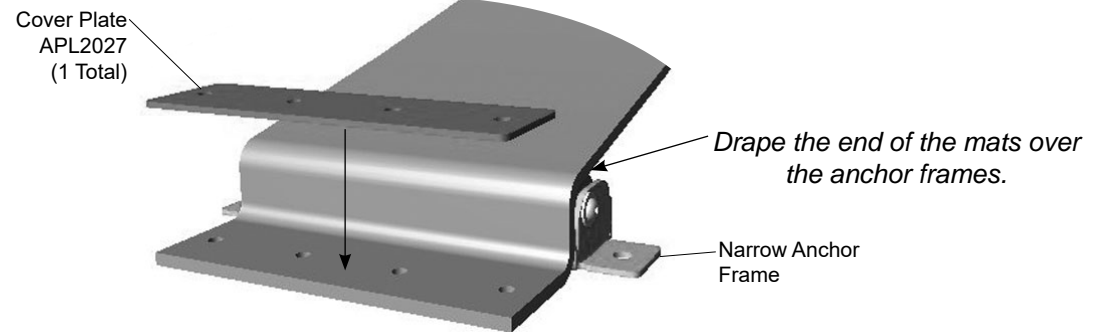
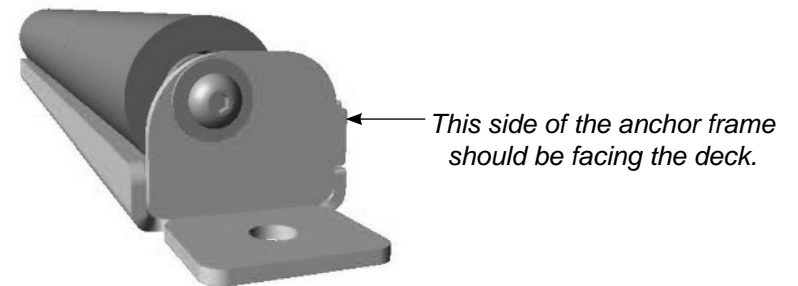
Attach the arch entry barrier to the deck mounting bracket.



Installation Instructions



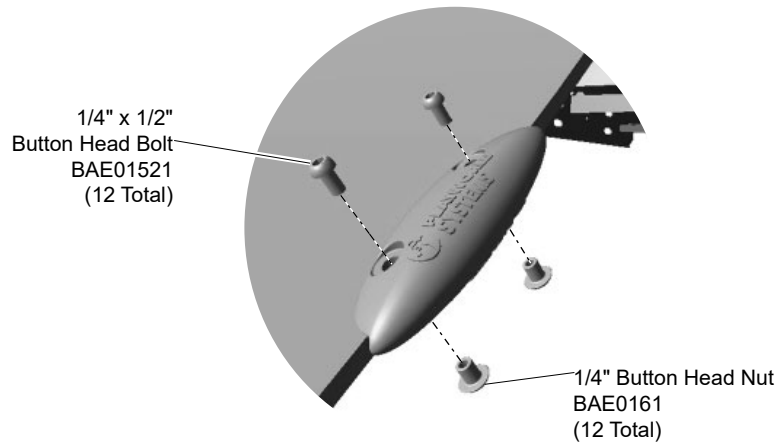
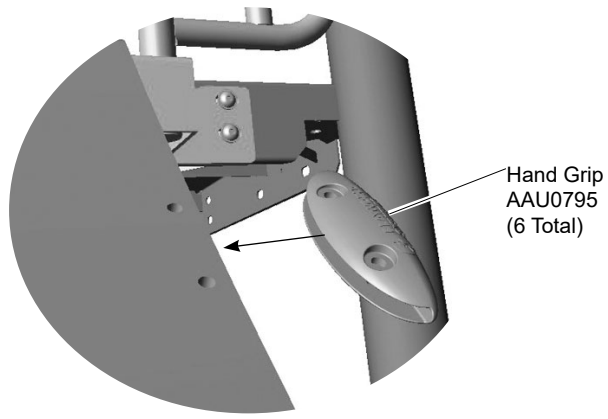
Detail J
Step 13
(In-Ground Model)
Attach the mat to the anchor frame.



Important Note: Hardware to bolt the mat and anchor frame to the surface is provided by the customer.

Detail J
Step 13
(Surface Mount Model)
Prepare the mat to the anchored.

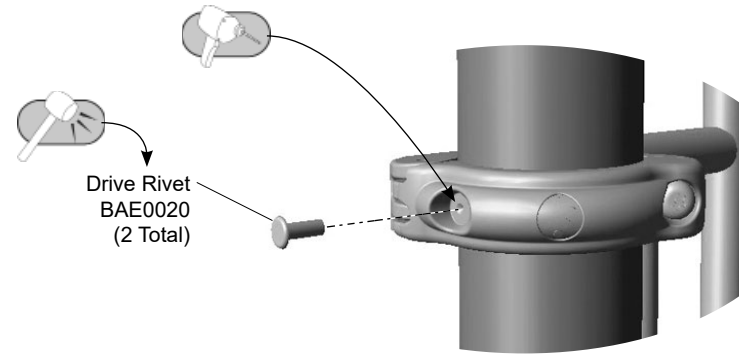
Installation Instructions



Detail K
Step 15



Attach the hand grips to the mat.



Detail L
Step 16

Secure the clamps to the support posts.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare the footings as shown in the **Footing Details** in the *Guidelines* at the beginning of this instruction booklet and on pages 6 and 7 of this installation document. For the in-ground model, use the **Component Footing Detail**.

Step 4: Assemble and attach the tie rod to the anchor frame. See **Details A-1 and A-2 (in-ground or surface mount)**. Insert and center the tie rod through the roll tubes. Insert the tie rod assembly into the top of the appropriate frame (either in-ground or surface mount) and attach as shown. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Step 5: Attach the mat to the deck (middle holes connection). See **Details B-1, B-2 and B-3**. Position the mat and mounting bracket against the deck with the middle holes aligned in each. From underneath the deck position the short braces against the bottom of the deck with the holes in the braces aligned with the middle holes in the deck. Attach the mat, the mounting bracket and short braces to the deck as shown.

Step 6: Attach the mounting bracket and long braces to the deck (outer holes connection). See **Details C-1 and C-2**. From underneath the deck position the long braces against the bottom of the deck with the holes in the braces aligned with the outer holes in the deck. Attach the mounting bracket and long braces to the deck as shown.

Step 7: Attach the cover plate to the mat and mounting bracket. See **Detail D**. Position the cover plate on top of the mat and align the holes in the plate with those in the mat and mounting bracket and attach as shown.

Step 8: Attach a clamp to one end only of the arch entry barrier. See **Detail E**. Place a clamp on one end of the barrier top rail, and attach as shown.

Step 9: Attach a clamp to opposite support post from which the clamp on the arch entry barrier will be attached. See **Detail F**. Close the clamp around the post at the height shown in the **Elevation View**, and attach as shown.

Step 10: Attach the arch entry barrier to the open support post. See **Details G-1 and G-2**. Insert the barrier bottom rungs into the deck mounting bracket and close the clamp around the support post. Attach the barrier clamp to the support post as shown.

Step 11: Attach the arch entry barrier to the clamp on the other support post. See **Details H-1 and H-2**. Turn the clamp around on the other support post to accept the open top rail of the arch entry barrier. Insert the top rail into the clamp, and attach as shown.

Step 12: Attach the arch entry barrier to the deck mounting bracket. See **Detail I**. Align the hole in each barrier rung with a hole in the bracket and attach as shown.

Step 13: In-Ground Model - Attach the mat to the anchor frame. See **Detail J**. Position the anchor frame in its designated holes and attach the mat as shown. Fully tighten the connections according to tightening torque specifications. Surface Mount Model - Place the footing frame on its designated footing, drape the end of the mat over top and place the cover plate on top of the mat with the holes aligned. See **Detail J**.

Important Note: Hardware to bolt the mat and anchor frame to the surface is provided by the customer.

Installation Instructions

Final Details.

Step 14: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 15: Attach the hand grips to the mat. See **Detail K**. Place the hand grips over the holes along the left and right edges of the mat and attach as shown. Fully tighten the connections according to tightening torque specifications.

Step 16: Install drive rivets to secure the clamps to the posts. See **Detail L**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH8266 - RUSHMORE 48 in. (1219 mm) SINGLE FLEX TREAD

PART NO.	DESCRIPTION	QTY.
AAU0220	CLAMP - 3-1/2" PIPE DIE CAST	2
AAU0795	RUSHMORE HANDLE	6
ABC0648	BRACKET - 1.50" x 3.12" x 11.25"	2
ABC0649	BRACKET - 1.50" x 3.12" x 6.00"	2
ABC0923	BRACKET - 23.75" x 3.91" x 3.18"	1
AEN0610	BARRIER - 57.36" x 36.58" ARCH ENTRY	1
AFM6581	FAB METAL - 1.029" O.D. x 11.00" w/INSERTS	1
AFR1458	FRAME - RUSHMORE FOOTING (CENTER)	1
AMC0640	RUSHMORE - MAT	1
APL2027	PLATE - 11.75" x 3.00" x 7 GA	1
APL2114	PLATE - 11.75" x 3.50" x 8 GA	1
ATM0241	2.00" O.D. x 5.66" TUBE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	12
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	12
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	26
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	16
BAE0630	SCREW - 3/8"-16 x 1/2" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	2
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	2

CH8266S - RUSHMORE 48 in. (1219 mm) SINGLE FLEX TREAD SM

PART NO.	DESCRIPTION	QTY.
AAU0220	CLAMP - 3-1/2" PIPE DIE CAST	2
AAU0795	RUSHMORE HANDLE	6
ABC0648	BRACKET - 1.50" x 3.12" x 11.25"	2
ABC0649	BRACKET - 1.50" x 3.12" x 6.00"	2
ABC0885	BRACKET - RUSHMORE ANCHOR (SHORT)	1
ABC0923	BRACKET - 23.75" x 3.91" x 3.18"	1
AEN0610	BARRIER - 57.36" x 36.58" ARCH ENTRY	1
AFM6581	FAB METAL - 1.029" O.D. x 11.00" w/INSERTS	1
AMC0640	RUSHMORE - MAT	1
APL2027	PLATE - 11.75" x 3.00" x 7 GA	1
APL2114	PLATE - 11.75" x 3.50" x 8 GA	1
ATM0241	2.00" O.D. x 5.66" TUBE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	12
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	12
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	18
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0630	SCREW - 3/8"-16 x 1/2" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	2
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	8
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	2

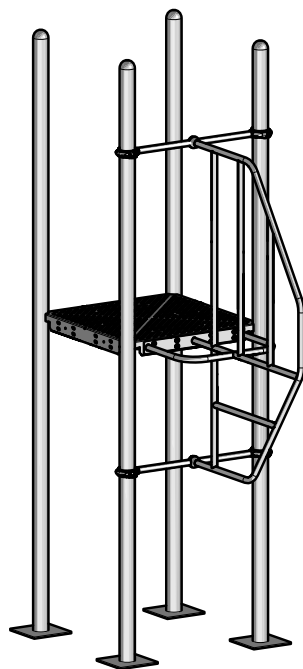
CH8267 - RUSHMORE 60 in. (1524 mm) SINGLE FLEX TREAD

PART NO.	DESCRIPTION	QTY.
AAU0220	CLAMP - 3-1/2" PIPE DIE CAST	2
AAU0795	RUSHMORE HANDLE	6
ABC0648	BRACKET - 1.50" x 3.12" x 11.25"	2
ABC0649	BRACKET - 1.50" x 3.12" x 6.00"	2
ABC0923	BRACKET - 23.75" x 3.91" x 3.18"	1
AEN0610	BARRIER - 57.36" x 36.58" ARCH ENTRY	1
AFM6581	FAB METAL - 1.029" O.D. x 11.00" w/INSERTS	1
AFR1458	FRAME - RUSHMORE FOOTING (CENTER)	1
AMC0640	RUSHMORE - MAT	1
APL2027	PLATE - 11.75" x 3.00" x 7 GA	1
APL2114	PLATE - 11.75" x 3.50" x 8 GA	1
ATM0241	2.00" O.D. x 5.66" TUBE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	12
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	12
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	26
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	16
BAE0630	SCREW - 3/8"-16 x 1/2" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	2
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	4
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	2

CH8267S - RUSHMORE 60 in. (1524 mm) SINGLE FLEX TREAD SM

PART NO.	DESCRIPTION	QTY.
AAU0220	CLAMP - 3-1/2" PIPE DIE CAST	2
AAU0795	RUSHMORE HANDLE	6
ABC0648	BRACKET - 1.50" x 3.12" x 11.25"	2
ABC0649	BRACKET - 1.50" x 3.12" x 6.00"	2
ABC0885	BRACKET - RUSHMORE ANCHOR (SHORT)	1
ABC0923	BRACKET - 23.75" x 3.91" x 3.18"	1
AEN0610	BARRIER - 57.36" x 36.58" ARCH ENTRY	1
AFM6581	FAB METAL - 1.029" O.D. x 11.00" w/INSERTS	1
AMC0640	RUSHMORE - MAT	1
APL2027	PLATE - 11.75" x 3.00" x 7 GA	1
APL2114	PLATE - 11.75" x 3.50" x 8 GA	1
ATM0241	2.00" O.D. x 5.66" TUBE	2
BAE0020	RIVET - 1/4" x 11/16" DRIVE	2
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	12
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	12
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	18
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0630	SCREW - 3/8"-16 x 1/2" SOCKET SET SS	2
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMP RESIST w/TORX DRIVE	2
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	2
BAE06645	BOLT - 3/8"-16 x 1-1/2" BUTTON HEAD - SS	2
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	8
BAE06673	BOLT - 3/8"-16 x 2" BUTTON HEAD - SS	2





Assembly View


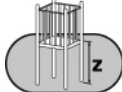

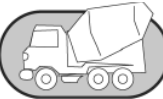
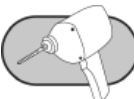

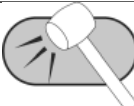
Installation Instructions

Challengers® Model CH8939 Transition Climber

Installation Preparation

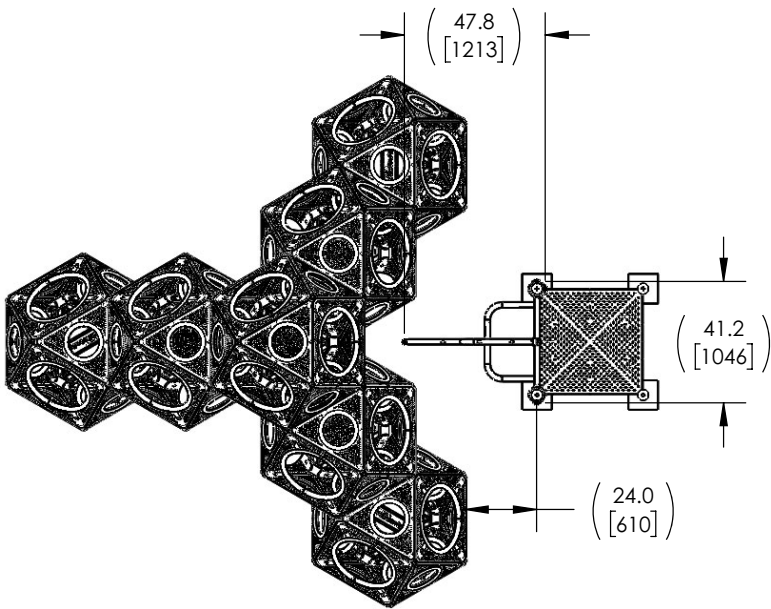
Recommended Crew: Two (2) adults
 Installation Time: 2 man-hours
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

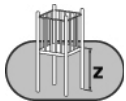
Installation Instructions

Top View

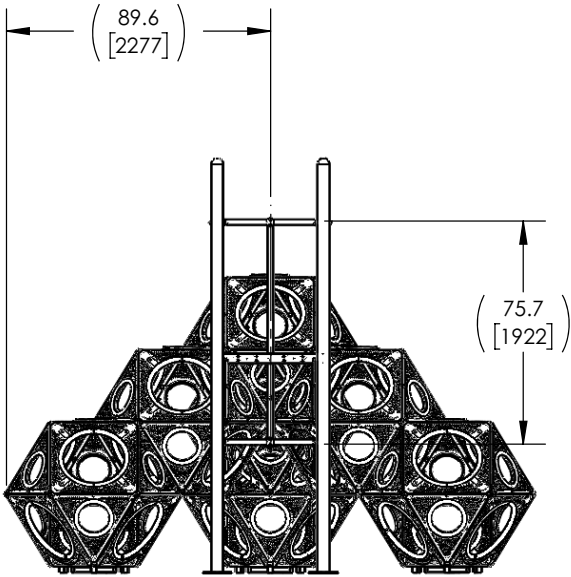
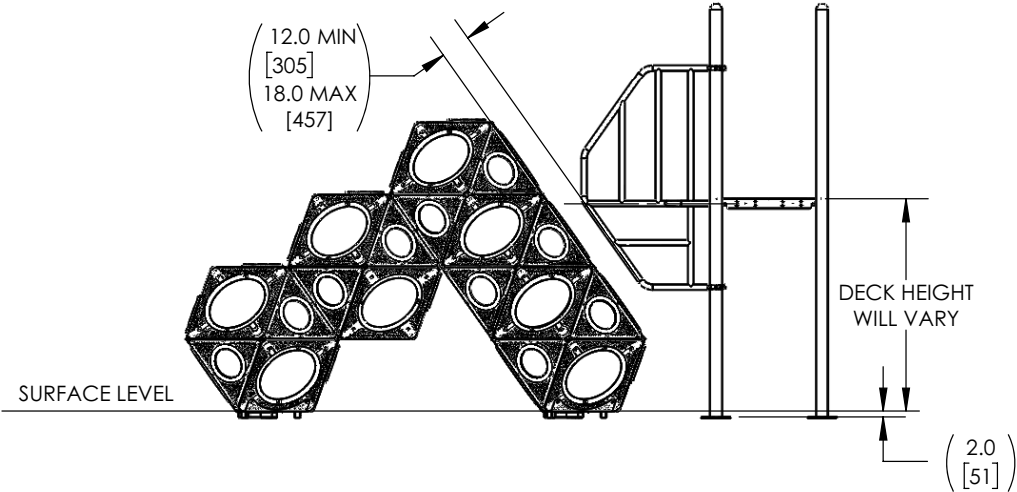


KEY

Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Critical Fall Height:
ASTM F1487: Equal to the height of the deck
CSA Z614: Equal to the height of the deck
EN1176: Equal to the height of the deck

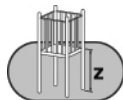
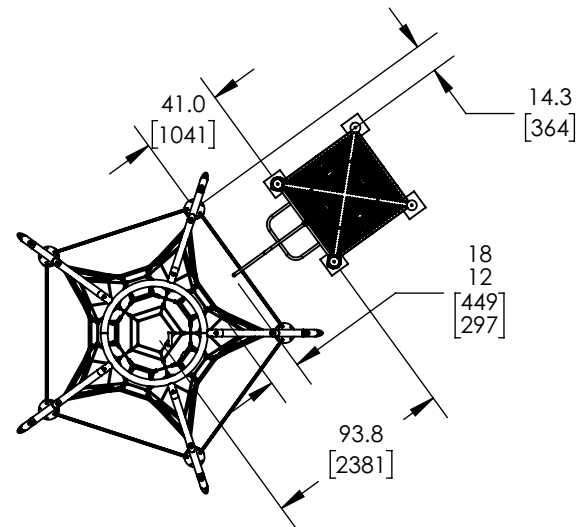
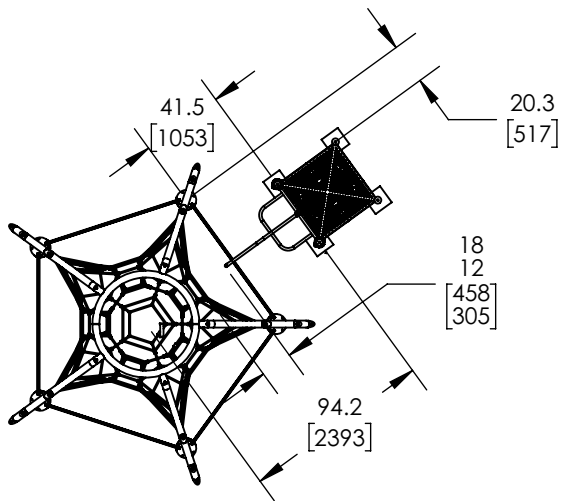


Elevation Views
ZZCH8939 with PlayCubes

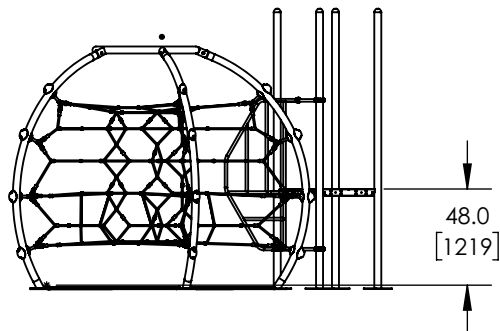


Installation Instructions

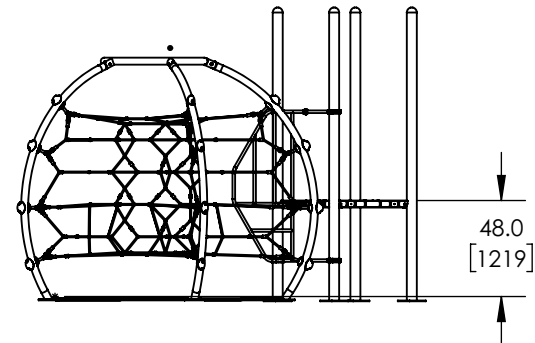
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Critical Fall Height:
 ASTM F1487: Equal to the height of the deck
 CSA Z614: Equal to the height of the deck
 EN1176: Equal to the height of the deck



Elevation Views
 ZZCH8939 with ZZXX1114S

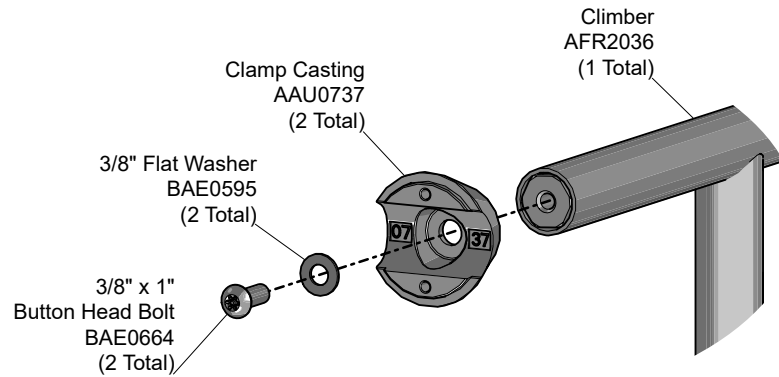


Elevation Views
 ZZCH8939 with ZZXX1115S



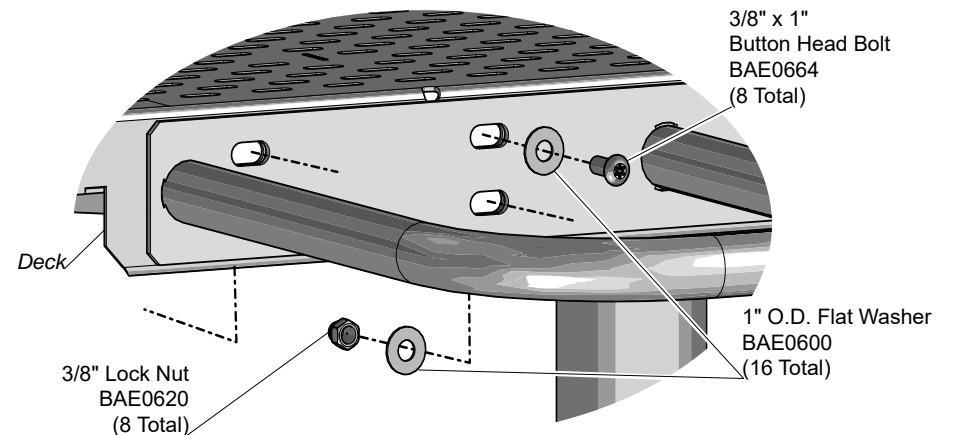
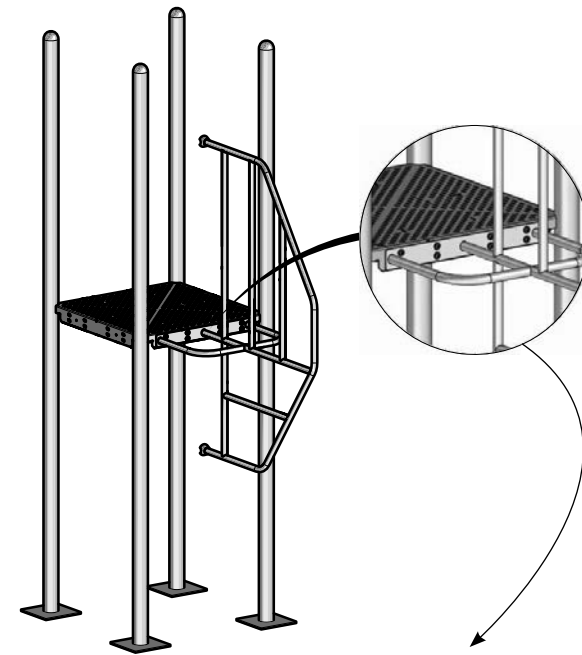
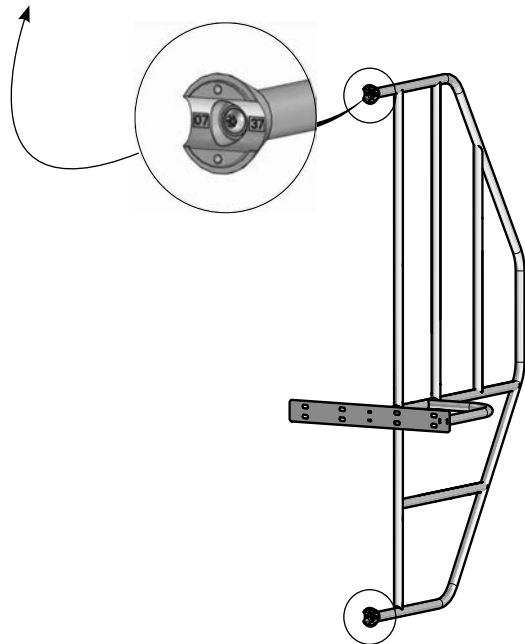
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 8.



Detail A
Step 3

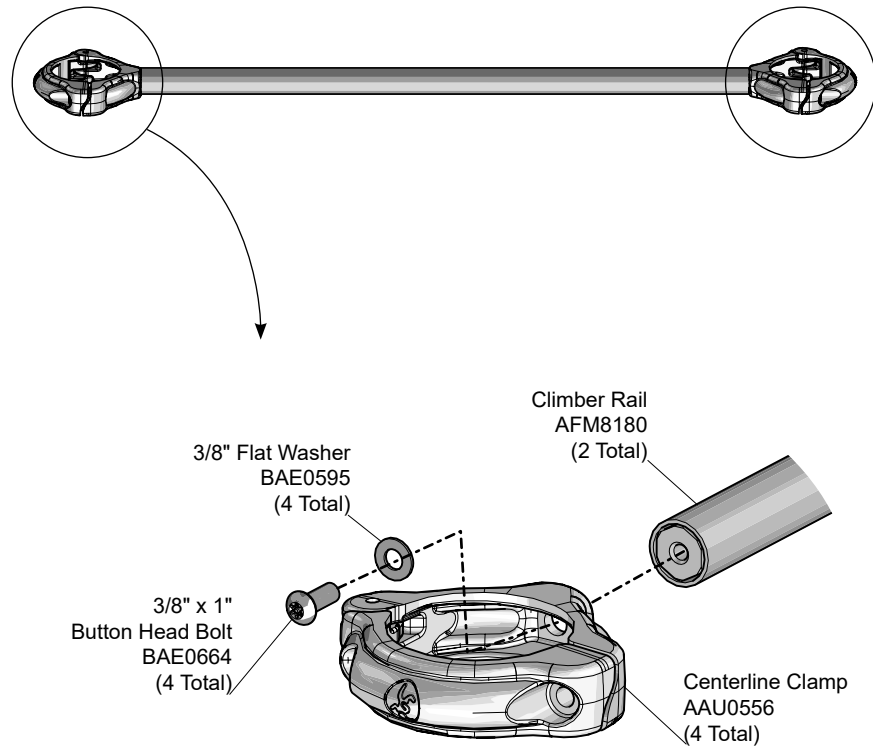
Attach the clamp castings to the climber.



Detail B
Step 4

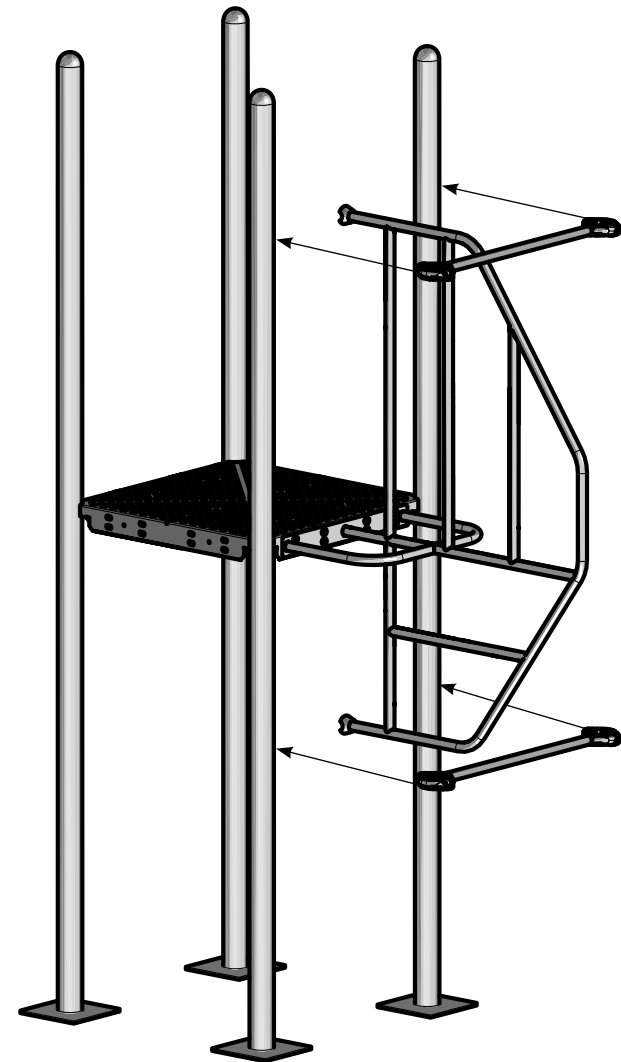
Attach the climber assembly to the deck.

Installation Instructions



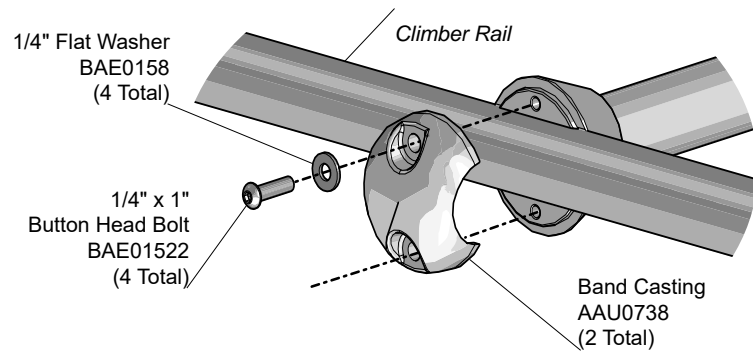
Detail C Step 5

Attach the clamps to the climber rails.



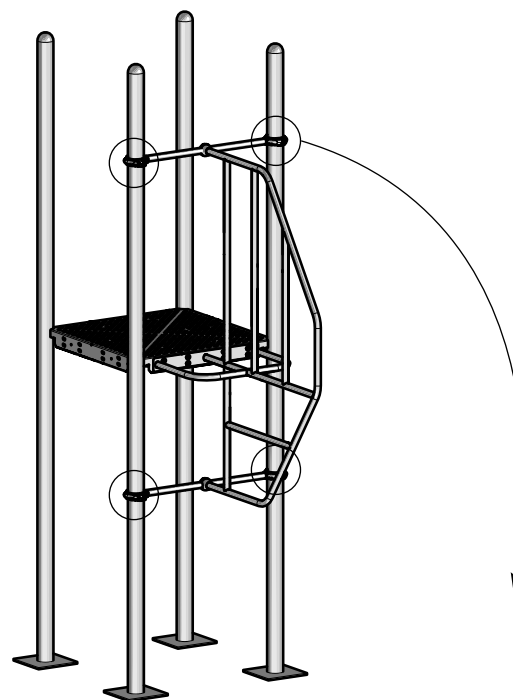
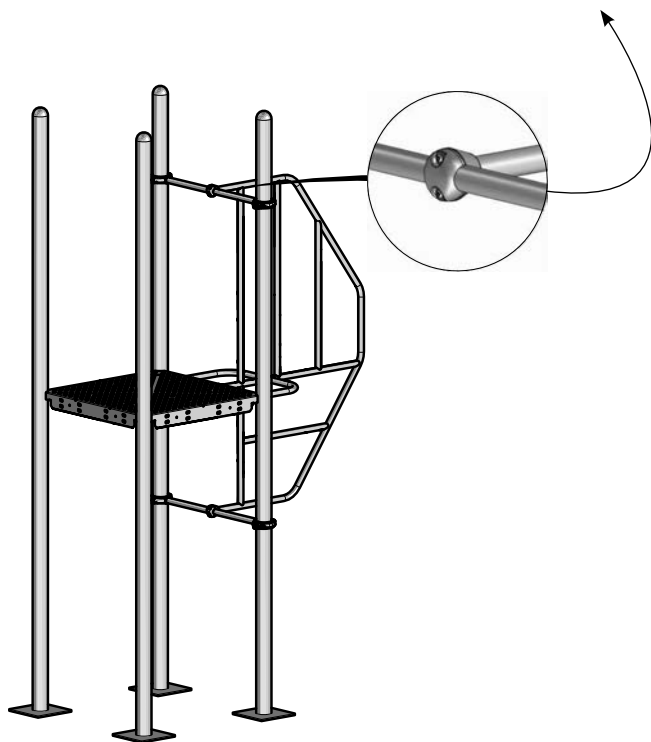
Place the climber rails on the support posts, see Elevation Views.

Installation Instructions

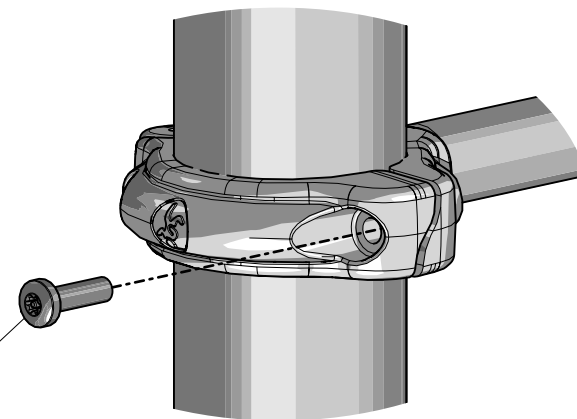


Detail D Step 6

Attach the climber rails to the climber assembly.



3/8" x 1-1/4"
Tamper Resistant Bolt
BAE0662
(4 Total)

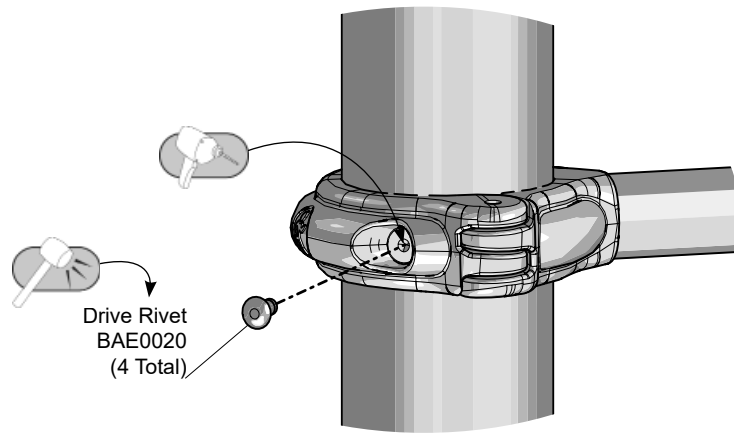


Detail E Step 8

Attach the clamps to the support posts.



Installation Instructions



Detail F

Step 9

*Secure the centerline clamps to
the support posts.*

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the clamp castings to the climber. See **Detail A**. Place the clamp casting against the ends of the climber, and attach as shown.

Step 4: Attach the climber assembly to the deck. See **Detail B**. With adequate manpower, position the bracket on the climber assembly against the front of the deck. Close the clamps around the support posts. Attach the climber as shown.

Step 5: Attach the clamps to the climber rails. See **Detail C**. Position the neck of the clamps against the ends of the climber rails. Attach as shown.

Step 6: Attach the climber rails to the climber assembly. See **Detail D and Elevation View**. Place the climber rails on the support posts. Position each climber rail in the center of the clamp castings and place the band casting against the other side of the climber rail. Attach as shown.

Final Details.

Step 7: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 8: Attach the clamps to the support posts. See **Detail E**. With the clamps around the support posts, attach as shown.

Step 9: Install drive rivets. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, drive the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH8939 - TRANSITION CLIMBER

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3.5" CENTERLINE DIECAST	4
AAU0737	CASTING - 1.315" DIA CLAMP	2
AAU0738	CASTING - 1.315" DIA BAND	2
AFM8180	FAB METAL - 1.315" O.D. x 30.50" w/CRIMPED INSERTS	2
AFR2036	FRAME - 27.00" x 45.37" x 75.72"	1
BAE0020	RIVET - 1/4" x 11/16" ALUMINUM DRIVE	4
BAE0158	WASHER - 1/4" SAE FLAT	4
BAE0595	WASHER - 3/8" SAE FLAT	6
BAE0600	WASHER - 1" O.D. FLAT	16
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	8
BAE0662	BOLT - 3/8"-16 x 1.25" TAMP RESIST w/TORX DRIVE	4
BAE0664	BOLT - 3/8"-16 x 1.00" BUTTON HEAD - SS	14
BAE01522	BOLT - 1/4"-20 x 1.00" BUTTON HEAD - SS	4

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Assembly View (representative model)

Installation Instructions


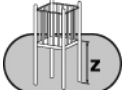

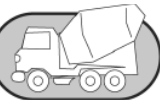
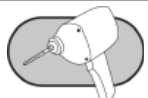

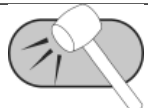
Challengers®

Models CH9168, CH9170 and CH9177
Deck to Deck Accessible Tiered Platform
12 in. (305 mm), 24 in. (610 mm) and
36" (914 mm) Rise Height

Installation Preparation

Recommended Crew: Two - Three (2-3) adults
Installation Time: 2 man-hours
Use Zone: Refer to Master Drawing
User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

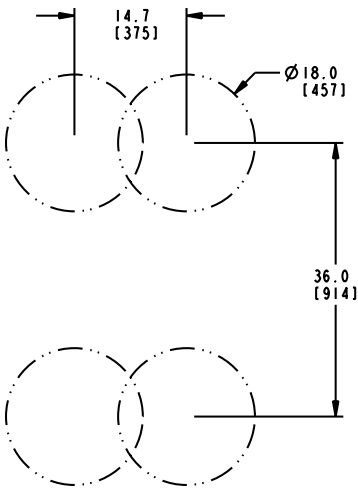
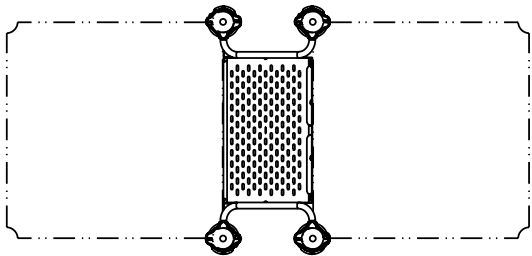
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

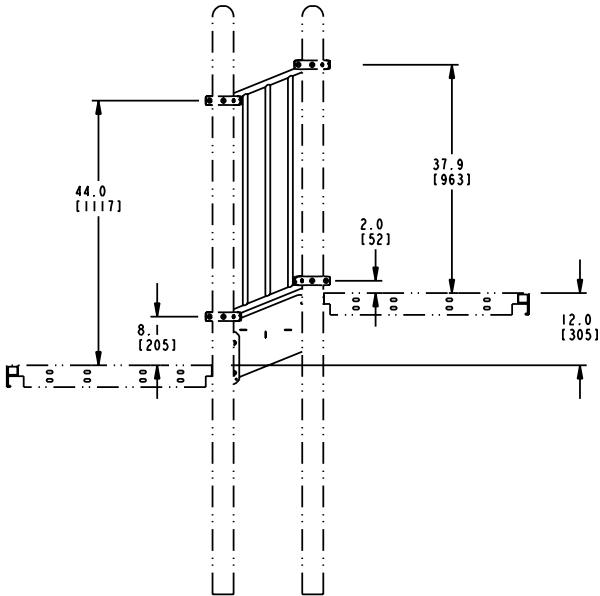
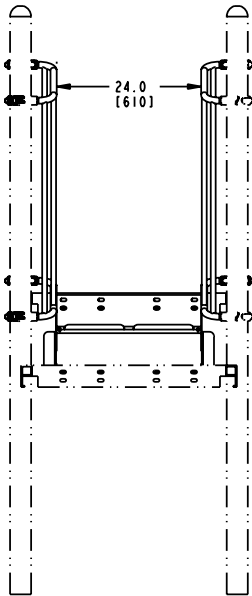
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

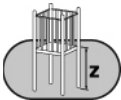
Top View



Footing Diagram



Elevation Views
CH9168

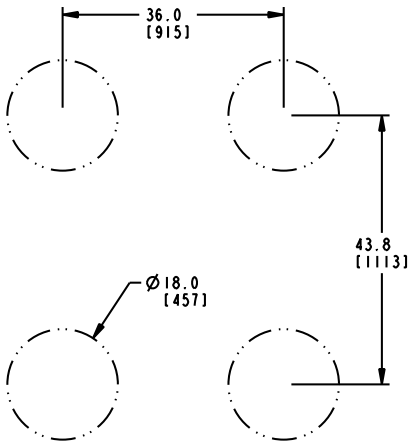
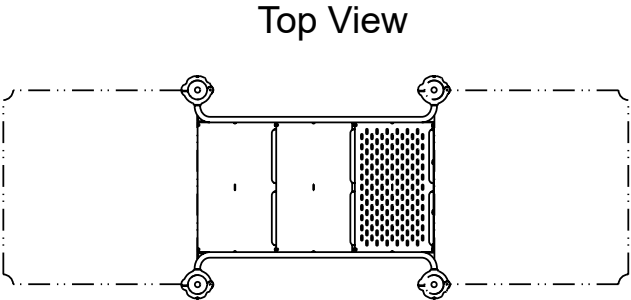


Height of the upper deck
minus 6" (152 mm)

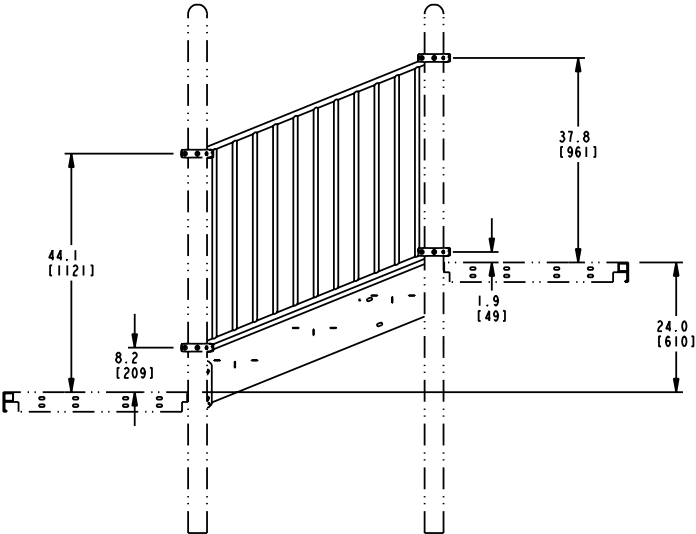
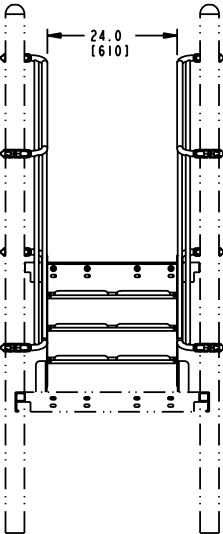


Installation Instructions

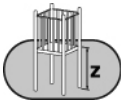
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



Elevation Views
CH9170



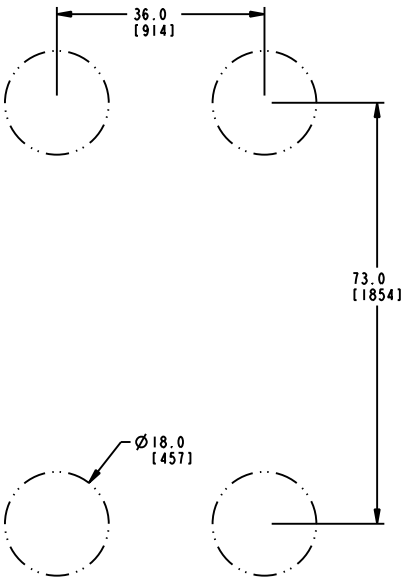
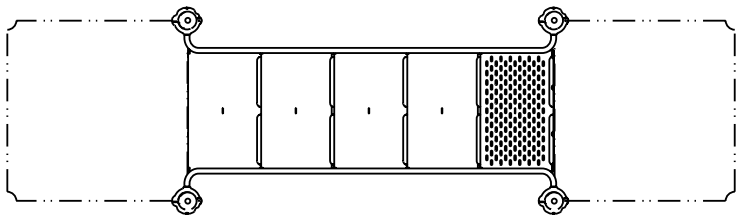
Height of the upper deck
minus 6" (152 mm)



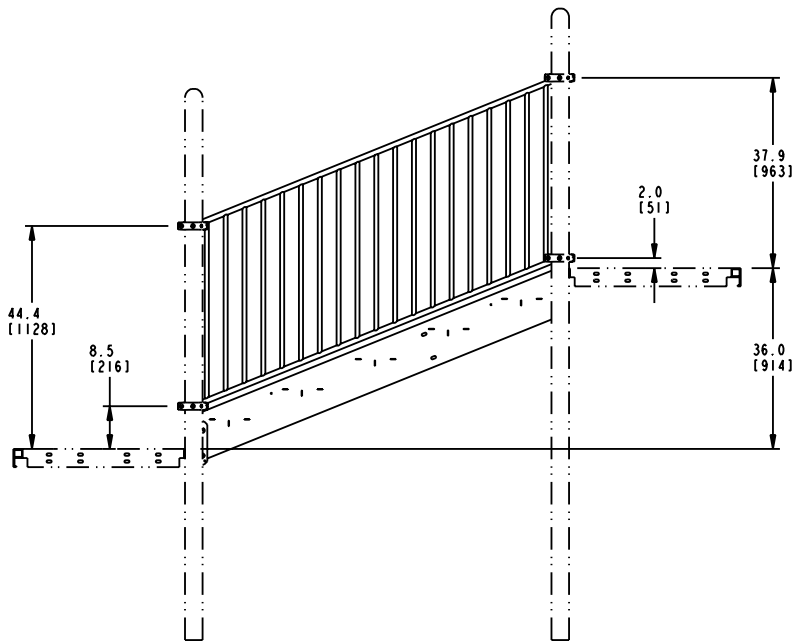
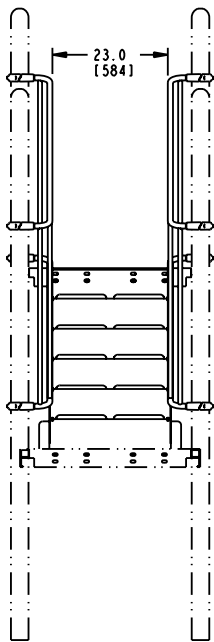
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

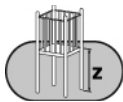
Top View



Footing Diagram



Elevation Views
CH9177

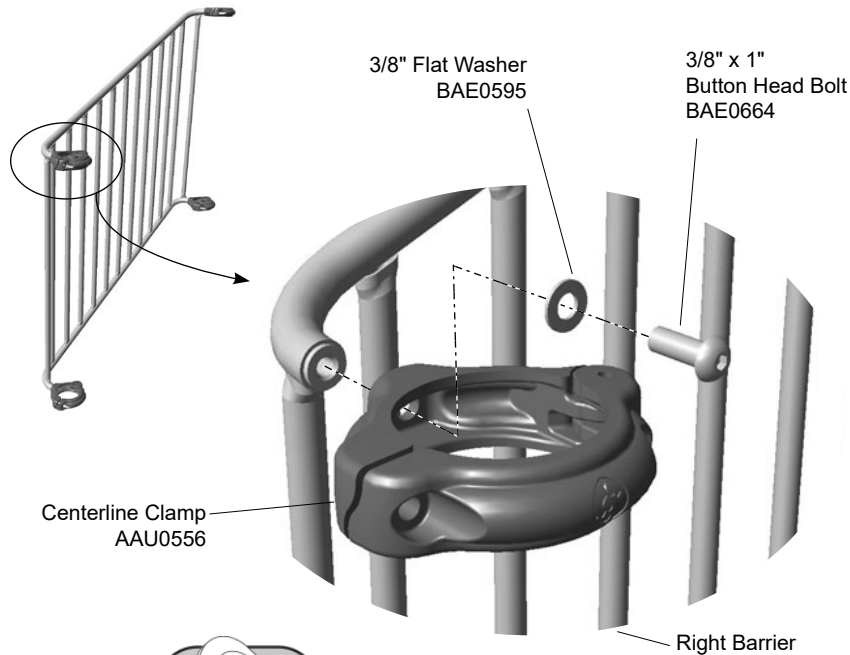


Height of the upper deck
minus 6" (152 mm)



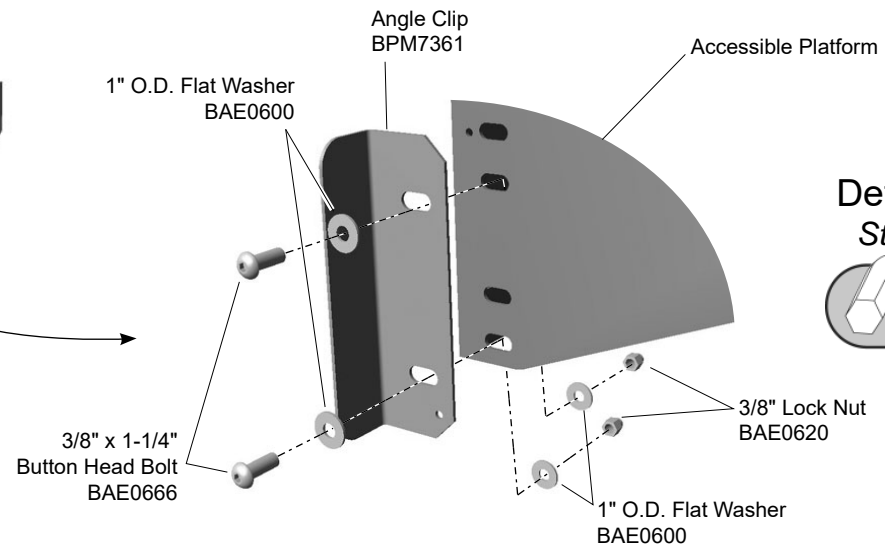
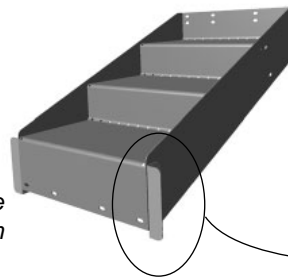
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



Detail A
Step 4

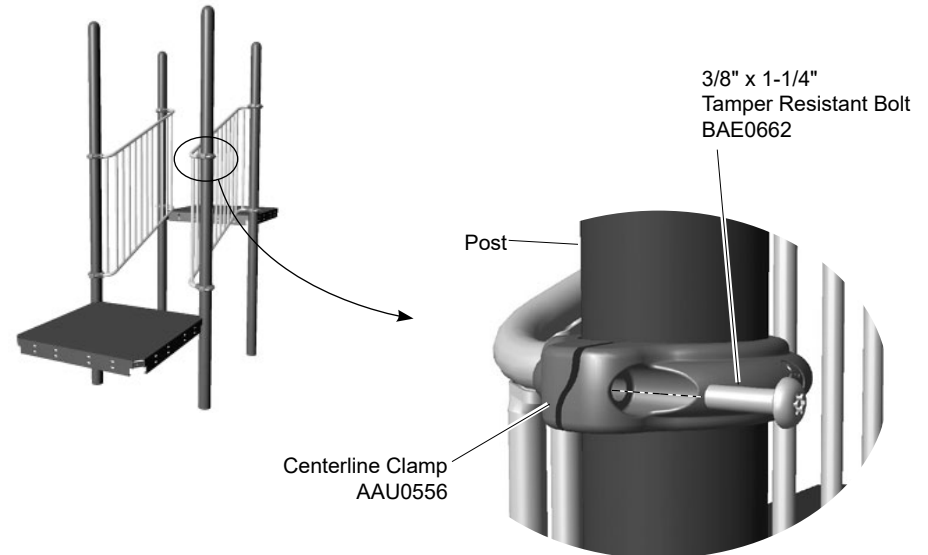
The front of angle clip should be even with the face of the platform



Detail C
Step 6



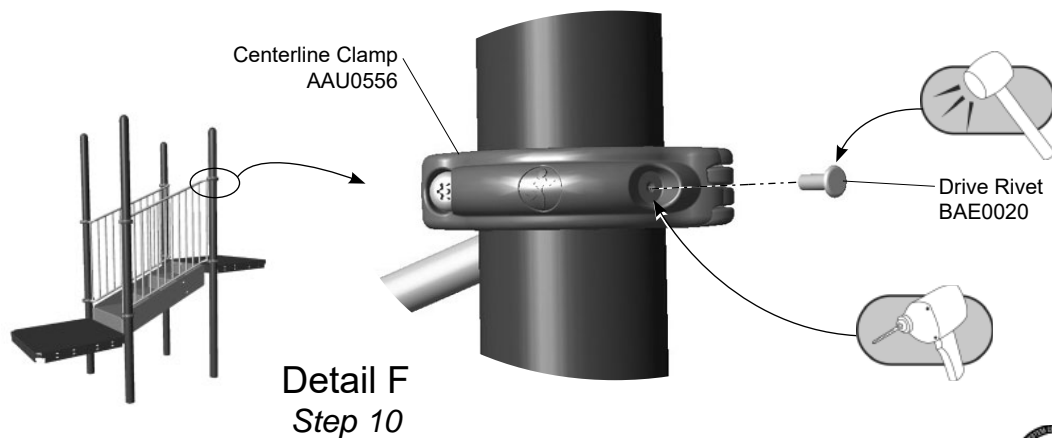
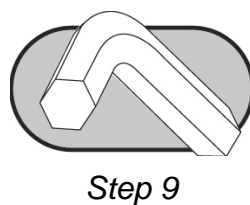
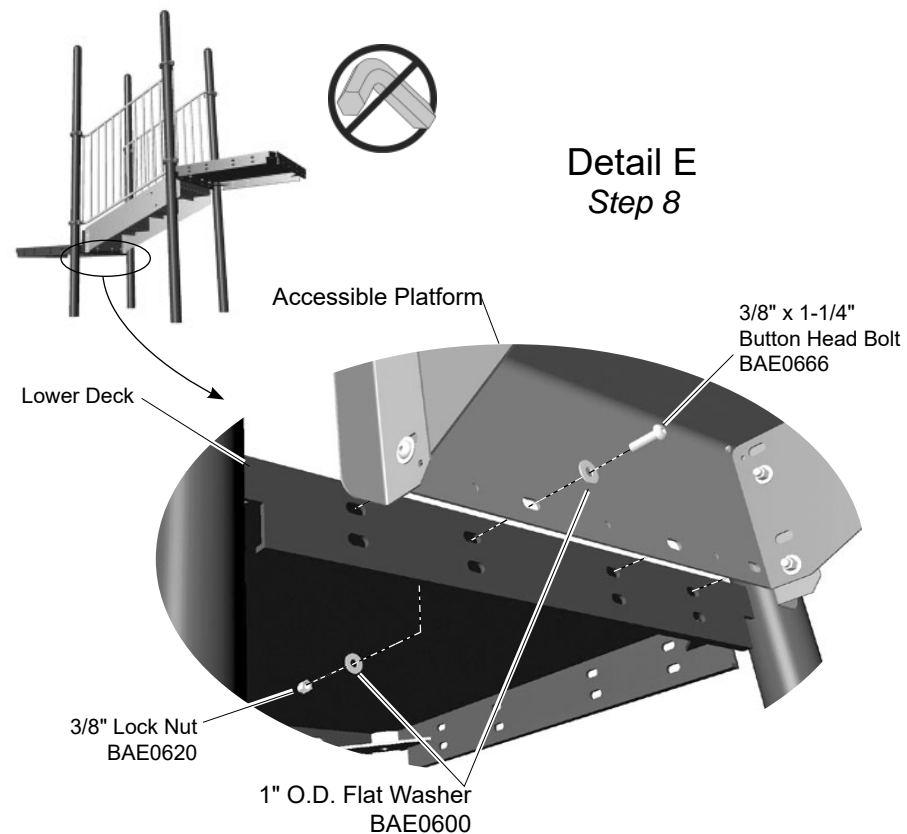
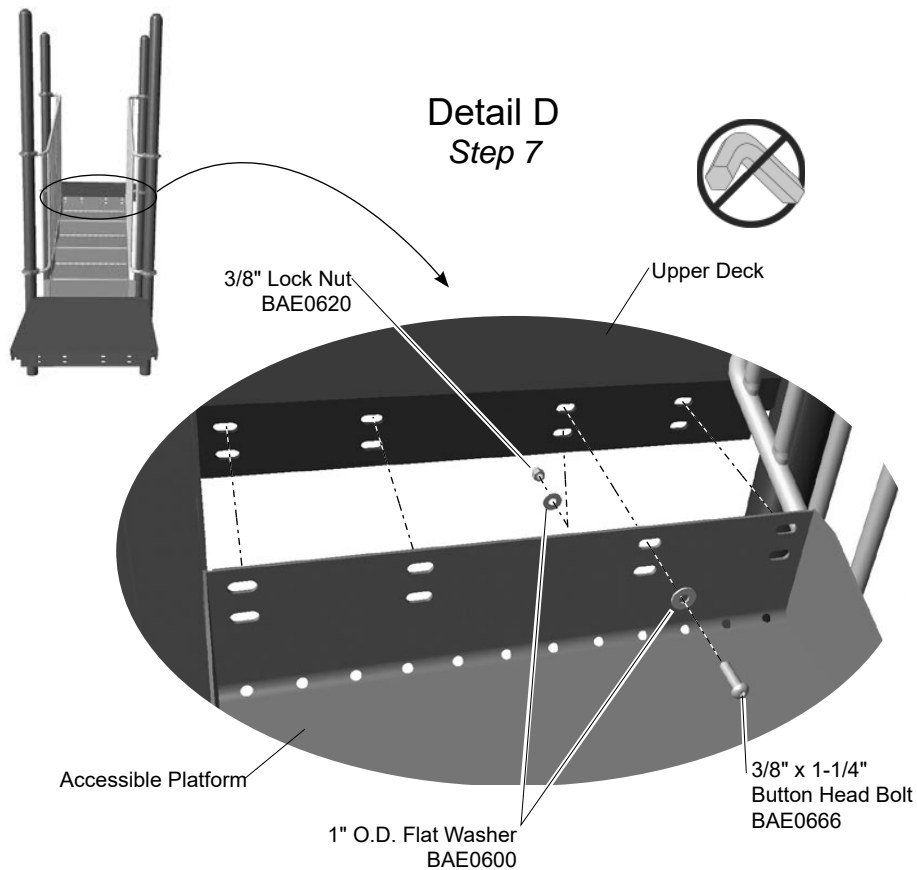
Model	Barriers (Right / Left)	Tiered Platform
ZZCH9168	AEN0479 / AEN0480	BPM0296
ZZCH9170	AEN0481 / AEN0482	BPM0298
ZZCH9177	AEN0483 / AEN0484	BPM0299



Detail B
Step 5



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Determine location of the platform by referring to the master layout drawing.

Step 4: Attach the clamps to the barriers. See **Detail A**. Select both barriers, the clamps, and the appropriate hardware. Attach a clamp to each of the ends of the barrier rails. There are (4) four clamp connections per barrier. Turn the clamps so that the hinges all face the same direction.

Step 5: Attach the barriers to the posts. See **Detail B**. Select both barriers and the tamper resistant bolts. Place the barriers between the posts, and attach as shown.

Step 6: Attach the angle clips to the accessible platform. See **Detail C**. Select both angle clips, the tiered platform, and the appropriate hardware. Place the angle clips against the lower side of the platform with the front faces aligned. Attach as shown.

Step 7: Attach the tiered platform to the upper deck. See **Detail D**. Select the tiered platform and the appropriate hardware. A brace will be necessary to support the weight until the lower connections are made. Place the platform between the decks and align the upper riser with the upper holes in the deck. Attach as shown. The upper edge of the step should not protrude above the edge of the deck.

Step 8: Attach the tiered platform to the lower deck. See **Detail E**. Select the appropriate hardware. Attach as shown.

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts & Nuts - Snug tighten and tighten an additional one-half turn.

Step 10: Rivet the clamps to the posts. See **Detail F**. After the equipment assembly is complete, install a drive rivet in each clamp to permanently secure it to the support post. Using a 1/4" drill bit, drill through the clamp and support post. Insert the drive rivet into drilled hole until the head of the rivet is against the surface of the clamp. Using a hammer, pound the pin of the rivet until it is flush with the surface of the rivet head.

Note: This step should be executed after structure has been assembled and properly footed.

CH9168 - 12" (305 mm) DECK TO DECK ACCESSIBLE TIERED PLATFORM

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	8
AEN0479	BARRIER - 12" ACCESS STAIR PROTECT w/INSERTS (RT)	1
AEN0480	BARRIER - 12" ACCESS STAIR PROTECT w/INSERTS (LT)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESIST w/TORX DRIVE	8
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	12
BPM0296	STAIR - 12" ACCESSIBLE	1
BPM7361	ACCESSIBLE STAIR ANGLE CLIP	2

CH9177 - 36" (610 mm) DECK TO DECK ACCESSIBLE TIERED PLATFORM

PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	8
AEN0483	BARRIER - 36" ACCESS STAIR PROTECT w/INSERTS (RT)	1
AEN0484	BARRIER - 36" ACCESS STAIR PROTECT w/INSERTS (LT)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESIST w/TORX DRIVE	8
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	12
BPM0299	STAIR - 36" ACCESSIBLE	1
BPM7361	ACCESSIBLE STAIR ANGLE CLIP	2

CH9170 - 24" (610 mm) DECK TO DECK ACCESSIBLE TIERED PLATFORM

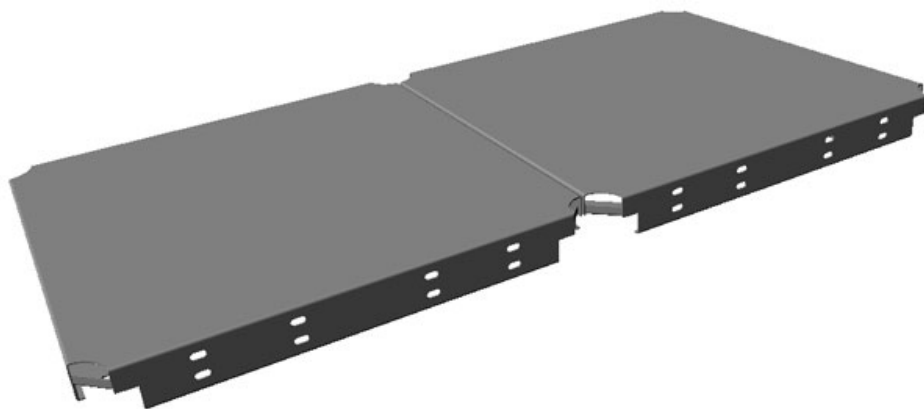
PART NO.	DESCRIPTION	QTY.
AAU0556	CLAMP - 3-1/2" CENTERLINE DIE CAST	8
AEN0481	BARRIER - 24" ACCESS STAIR PROTECTIVE w/INS. (RT)	1
AEN0482	BARRIER - 24" ACCESS STAIR PROTECTIVE w/INS. (LT)	1
BAE0020	RIVET - 1/4" x 11/16" DRIVE	8
BAE0595	WASHER - 3/8" SAE FLAT	8
BAE0600	WASHER - 1" O.D. FLAT	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	12
BAE0662	BOLT - 3/8"-16 x 1-1/4" TAMPER RESIST w/TORX DRIVE	8
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	8
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	12
BPM0298	STAIR - 24" ACCESSIBLE	1
BPM7361	ACCESSIBLE STAIR ANGLE CLIP	2



Installation Instructions

Universal Model UN2290

Coated Deck to Deck Connecting Kit




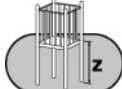

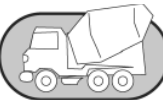



Assembly View

Installation Preparation

Recommended Crew: One (1) adult

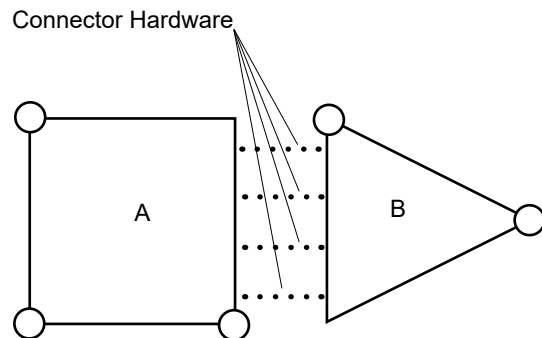
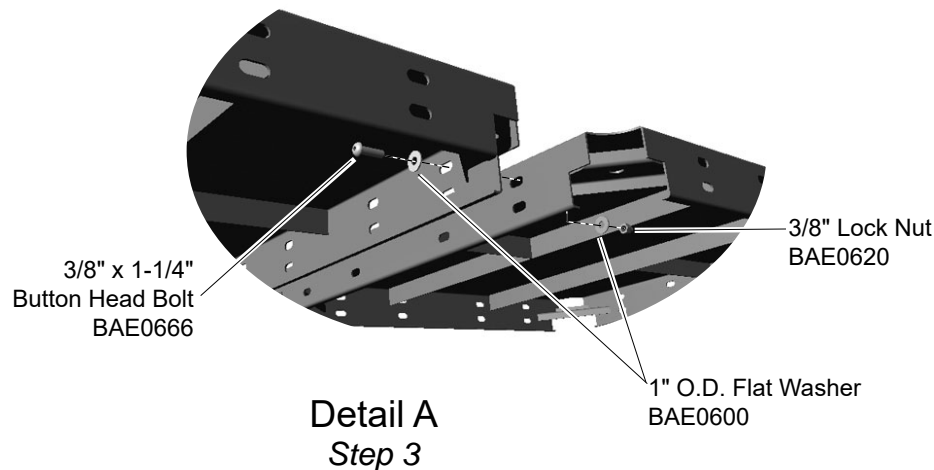
Installation Time: 0.25 hour

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on this page.



Clamp Position - Adjacent Decks

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Important Note: When placing decks side by side at the same height there will be a clamp conflict. Place the clamps so that there will be adequate support for each deck.

(ex: square and tri decks- 3 clamps on the square deck and 2 clamps on the tri deck) The hardware below will make the connection secure. The open corner of a deck should always be resting on the adjacent deck's clamp. See **Clamp Position Detail** at lower left.

Connect the decks.

Step 3: Connect the decks. See **Detail A**. Select the existing decks and the appropriate hardware. There are (8) eight connections. Place the decks together to form the required deck configuration. Align the the (4) four holes in the side support of one deck with those of the second deck and attach as shown.

Final Details

Step 4: Check to ensure that the deck to deck connection is plumb and level. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

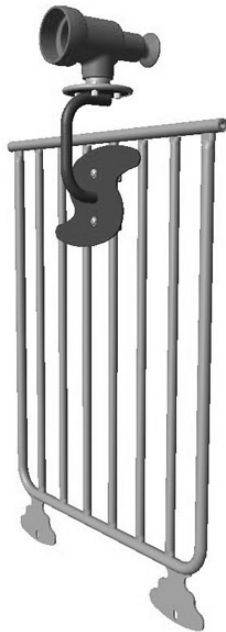
UN - COATED DECK TO DECK CONNECTING KIT

PART NO.	DESCRIPTION	QTY.
BAE0600	WASHER - 1" O.D. FLAT	8
BAE0620	NUT - 3/8"-16 LOCK w/ NYLON CAP	4
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD CAP	4



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Assembly View (representative model)

Model	Description
ZZUN4279	Pipe Wall Mount (CH/EX)
ZZUN4280	Pipe Wall Mount for (PM)
ZZUN4438	Pipe Wall Mount w/Lens (CH/EX)
ZZUN4439	Pipe Wall Mount w/Lens (PM)

Installation Instructions


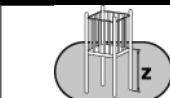




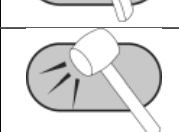
Universal Models UN4279, UN4280,
UN4438, & UN4439

Telescope Pipe Wall Mount (CH/EX) or (PM) &
Telescope Pipe Wall Mount w/ Lens (CH/EX) or (PM)

Installation Preparation

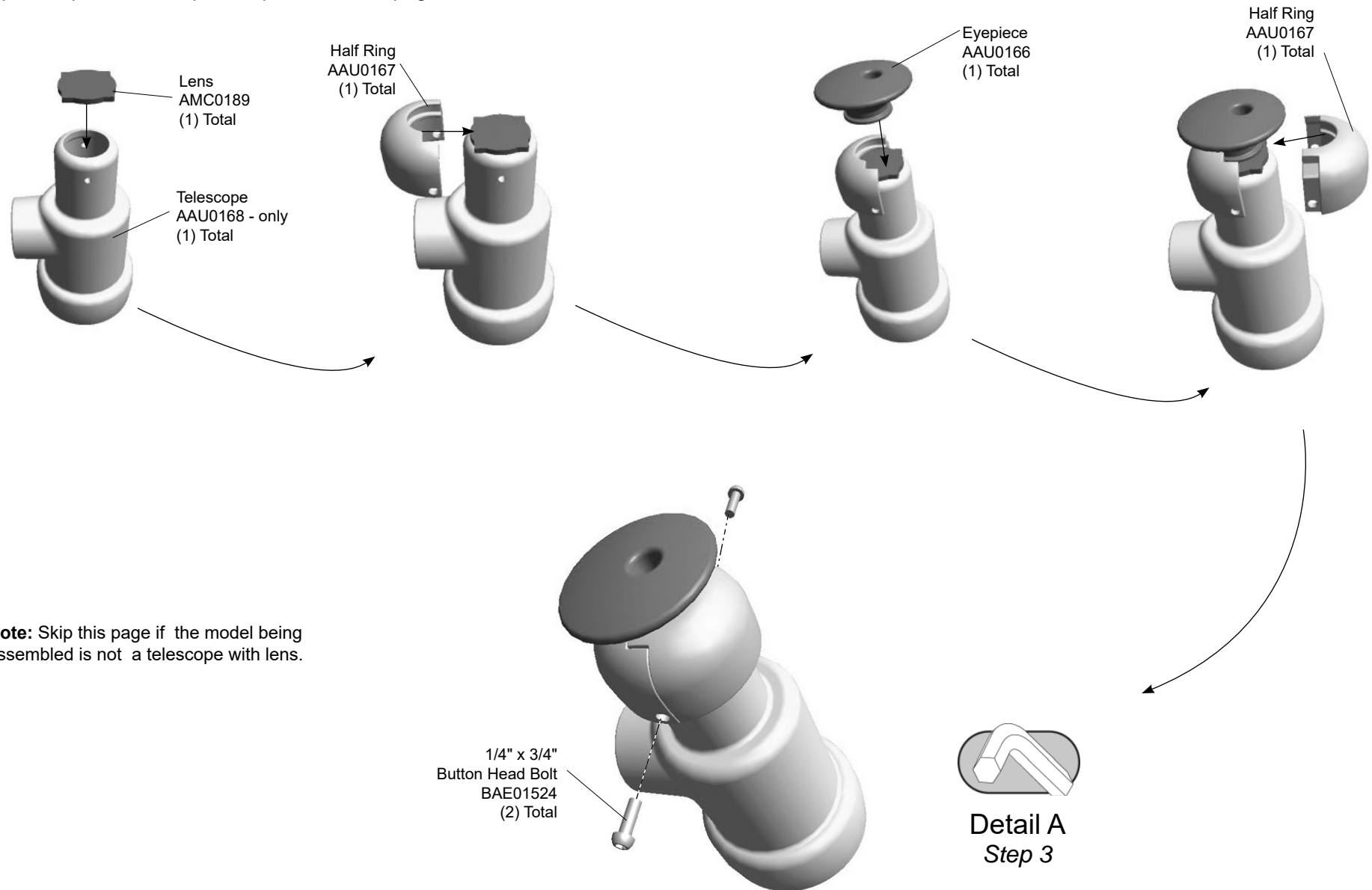
Recommended Crew: One (1) adult
 Installation Time: 0.5 hour
 Use Zone: Refer to Master Drawing
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY

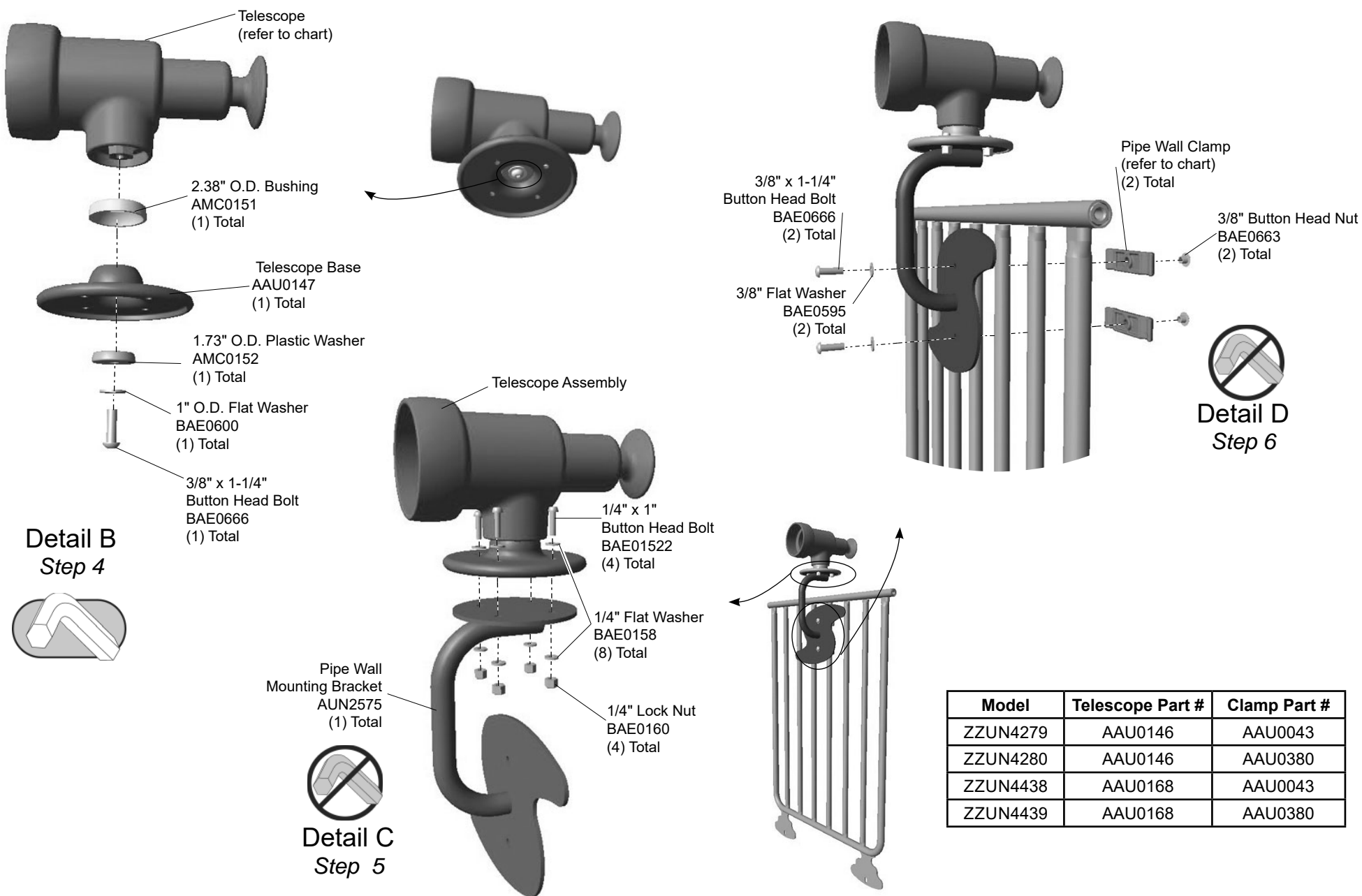
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 4.



Installation Instructions



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Assemble the telescope. Note: *Skip this step if the model being assembled is not a telescope with a lens.* **See Detail A.** Attach as shown. Fully tighten the connections. The eyepiece should turn easily within the assembly.

Step 4: Attach the telescope to the base. **See Detail B.** Attach as shown. Fully tighten the connection.

Step 5: Attach the telescope to the mounting bracket. See **Detail C.** Attach as shown.

Step 6: Attach the bracket to the pipe wall barrier. See **Detail D.** Position the bracket on the proper side of the pipe wall barrier looking out from the structure. The telescope should extend above the pipe wall barrier with the eyepiece toward the deck. Attach as shown.

Final Details.

Step 7: Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Bill of Materials

UN4279 - TELESCOPE PIPE WALL MOUNT (CH/EX)

PART NO.	DESCRIPTION	QTY.
AAU0043	CLAMP - STEERING WHEEL FOR 4" CENTERS	2
AAU0146	CASTING - TELESCOPE BODY	1
AAU0147	CASTING - TELESCOPE BASE (FULL MOTION)	1
AMC0151	BUSHING - 2.38" O.D. x .50"	1
AMC0152	WASHER - 1.73" O.D. x .38" w/HOLE	1
AUN2575	BRACKET - PIPE WALL TELESCOPE MOUNT	1
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0160	NUT - 1/4"-20 HEAVY LOCK w/o NYLON CAP	4
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	1
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	2
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	3
BAE01522	BOLT - 1/4"-20 x 1" BUTTON HEAD - SS	4

UN4280 - TELESCOPE PIPE WALL MOUNT (PM)

PART NO.	DESCRIPTION	QTY.
AAU0146	CASTING - TELESCOPE BODY	1
AAU0147	CASTING - TELESCOPE BASE (FULL MOTION)	1
AAU0380	CLAMP - STEERING WHEEL	2
AMC0151	BUSHING - 2.38" O.D. x .50"	1
AMC0152	WASHER - 1.73" O.D. x .38" w/HOLE	1
AUN2575	BRACKET - PIPE WALL TELESCOPE MOUNT	1
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0160	NUT - 1/4"-20 HEAVY LOCK w/o NYLON CAP	4
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	1
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	2
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	3
BAE01522	BOLT - 1/4"-20 x 1" BUTTON HEAD - SS	4

UN4438 - TELESCOPE PIPE WALL MOUNT (CH/EX)

PART NO.	DESCRIPTION	QTY.
AAU0043	CLAMP - STEERING WHEEL FOR 4" CENTERS	2
AAU0147	CASTING - TELESCOPE BASE (FULL MOTION)	1
AAU0166	CASTING - EYEPIECE	1
AAU0167	CASTING - RING HALF	2
AAU0168	CASTING - TELESCOPE MACHINED	1
AMC0151	BUSHING - 2.38" O.D. x .50"	1
AMC0152	WASHER - 1.73" O.D. x .38" w/HOLE	1
AMC0189	SILKSCREENED LEXAN LENS	1
AUN2575	BRACKET - PIPE WALL TELESCOPE MOUNT	1
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0160	NUT - 1/4"-20 HEAVY LOCK w/o NYLON CAP	4
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	1
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	2
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	3
BAE01522	BOLT - 1/4"-20 x 1" BUTTON HEAD - SS	4
BAE01524	BOLT - 1/4"-20 x 3/4" BUTTON HEAD - SS	2

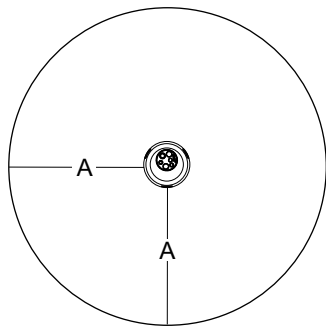
UN4439 - TELESCOPE PIPE WALL MOUNT (PM)

PART NO.	DESCRIPTION	QTY.
AAU0147	CASTING - TELESCOPE BASE (FULL MOTION)	1
AAU0166	CASTING - EYEPIECE	1
AAU0167	CASTING - RING HALF	2
AAU0168	CASTING - TELESCOPE MACHINED	1
AAU0380	CLAMP - STEERING WHEEL	2
AMC0151	BUSHING - 2.38" O.D. x .50"	1
AMC0152	WASHER - 1.73" O.D. x .38" w/HOLE	1
AMC0189	SILKSCREENED LEXAN LENS	1
AUN2575	BRACKET - PIPE WALL TELESCOPE MOUNT	1
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0160	NUT - 1/4"-20 HEAVY LOCK w/o NYLON CAP	4
BAE0595	WASHER - 3/8" SAE FLAT	2
BAE0600	WASHER - 1" O.D. FLAT	1
BAE0663	NUT - 3/8"-16 x 7/16" BUTTON HEAD	2
BAE0666	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD - SS	3
BAE01522	BOLT - 1/4"-20 x 1" BUTTON HEAD - SS	4
BAE01524	BOLT - 1/4"-20 x 3/4" BUTTON HEAD - SS	2





Assembly View (representative model)



Equipment Use Zone
A - (ASTM) 72 in. (1830 mm)
(CSA) 1800 mm
(EN) 1500 mm

Installation Instructions


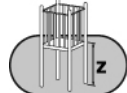

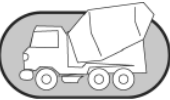


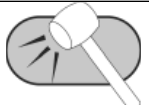
Universal Models UN7136 and UN7136S

Unity Stepper (Small)

In-Ground and Surface Mount

Installation Preparation

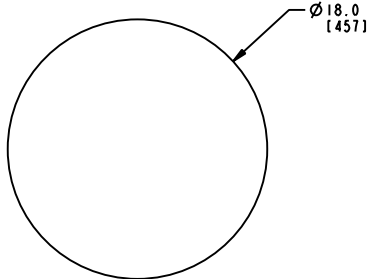
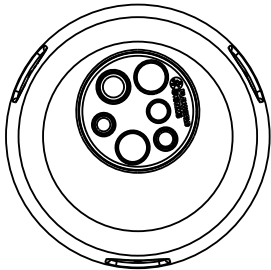
Recommended Crew: Two (2) adults
Installation Time (in-ground): 1 man-hour
Installation Time (surface mount): 0.5 man-hour
Concrete Required: 0.13 cubic yard (0,10 cubic meters)
Use Zone: Refer to the information below
User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY			
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

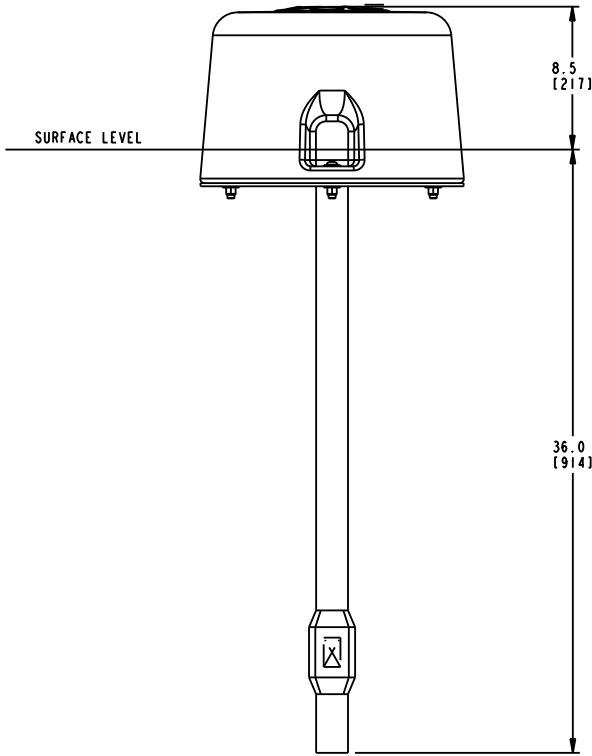
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

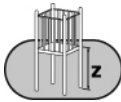
Top View



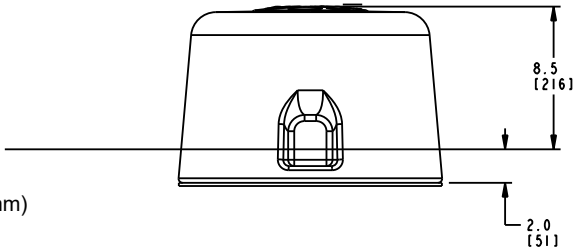
Footring Diagram



Elevation Views
UN7136



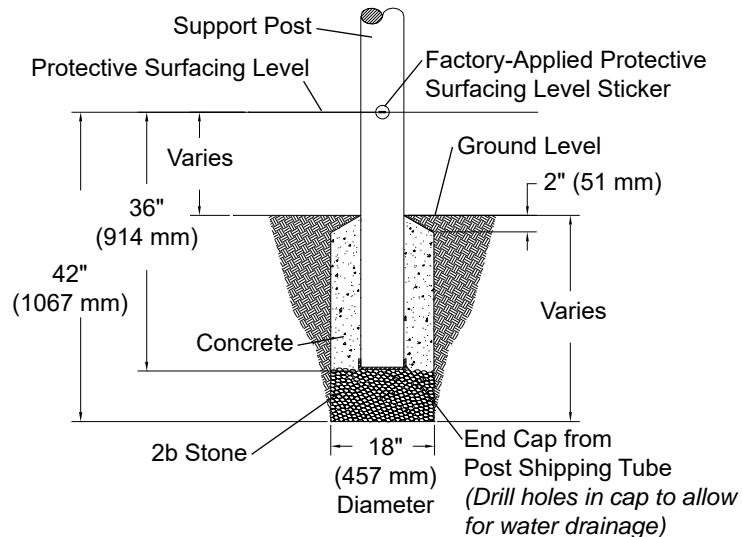
ASTM/CSA: 8.5" (217 mm)
EN: 217 mm



Elevation Views
UN7136S



Installation Instructions



Support Post Footing Detail (ASTM/CSA)

FOOTING NOTES

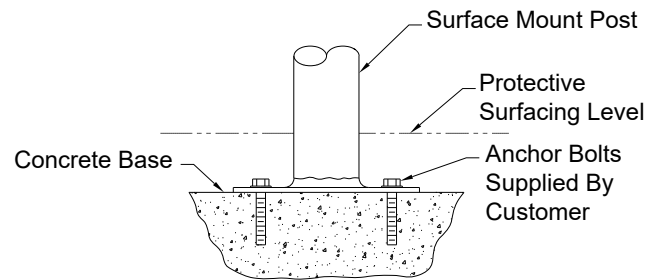
- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

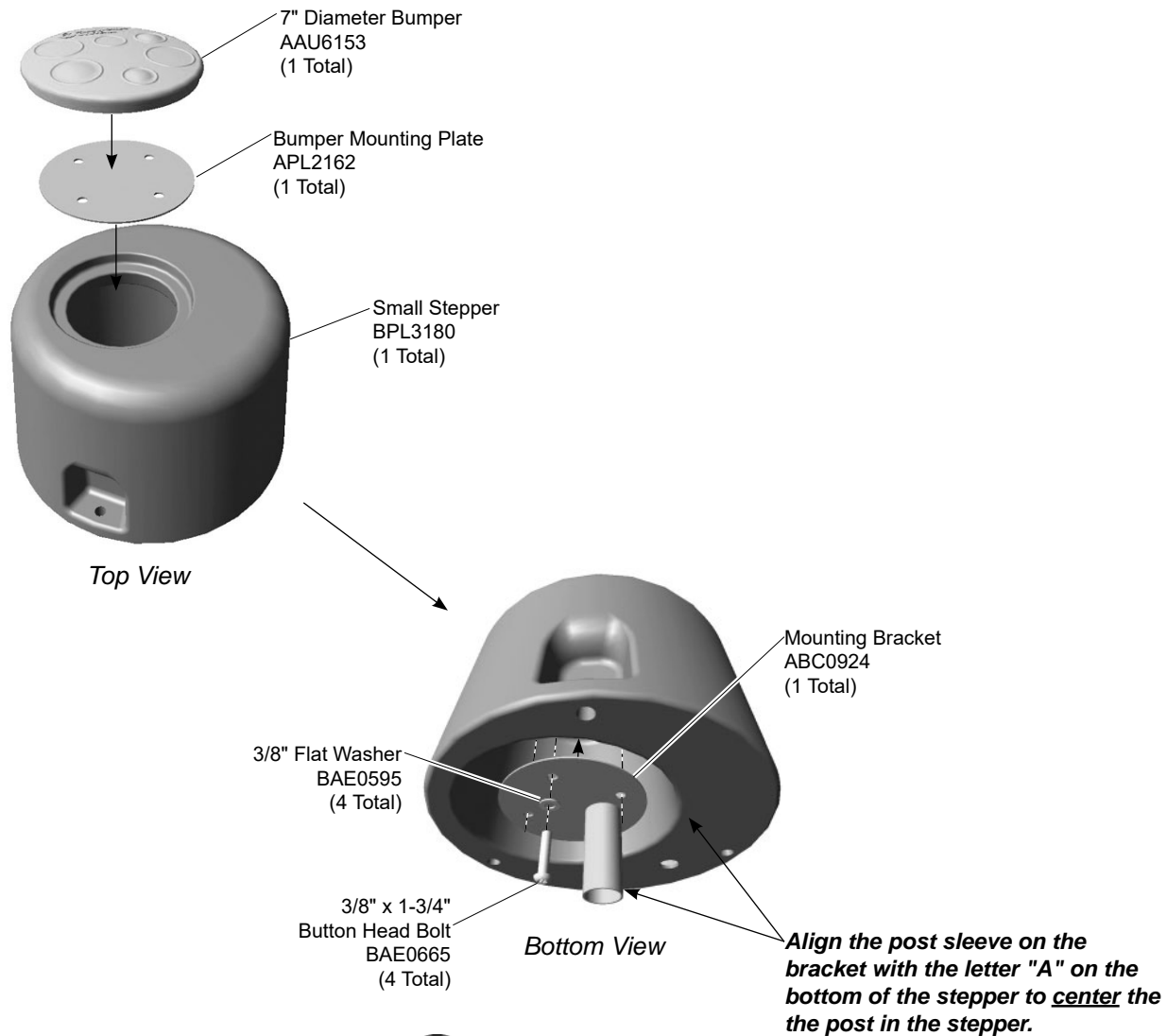
FOOTING NOTES


- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

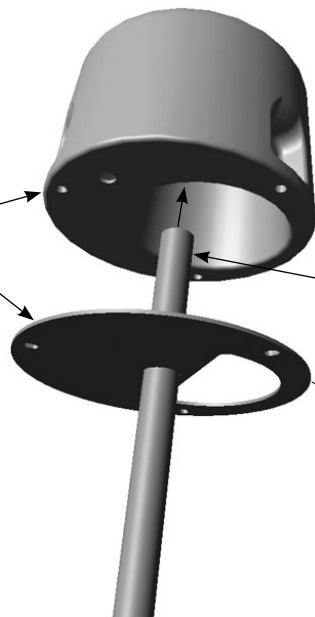
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 7.



Detail A 
Step 4
Assemble the stepper.

Installation Instructions

Important Note: The wide part of the anchor plate must align with the wide portion of the stepper. Ensure the holes in both are also aligned. Then fully tighten the connections made in **Step 4**.

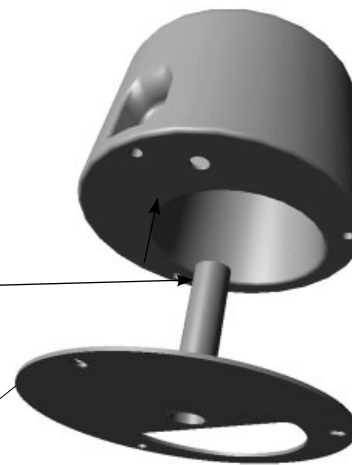


In-Ground Model

Insert over the post sleeve on the mounting bracket.

Anchor Post
APT5254
(1 Total)

Anchor Bracket
APT5299
(1 Total)

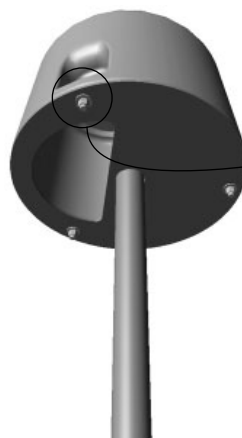


Surface Mount Model

Detail B Step 5



Position the anchor post/bracket inside the stepper.



3/8" x 1-3/4"
Button Head Bolt
BAE0665
(3 Total)

1" O.D. Flat Washer
BAE0600
(6 Total)

3/8" Lock Nut
BAE0620
(3 Total)

Detail C Step 6



*(In-Ground Model Only)
Attach the anchor post to the stepper.*

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate, or prepare, the footings as shown in the **Support Post Footing Detail or Surface Mount Footing Detail** on pages 3 and 4 of this installation document.

Step 4: Assemble the stepper. See **Detail A**. Place the bumper and bumper mounting plate on top of the stepper. From underneath the stepper, insert the mounting bracket up into the stepper and align with the holes in the bumper and bumper mounting plate. **Ensure the post sleeve on the bracket is aligned with the letter "A" in the bottom of the stepper.**

Step 5: Position the anchor post/bracket inside the stepper. See **Detail B**. Insert the sleeve on the anchor post/bracket over the post sleeve on the mounting bracket with the wide part of the anchor plate aligned with the wide portion of the stepper. Align the holes in the anchor plate with the holes in the stepper and then fully tighten the connections made in **Step 4**. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 6: *(In-Ground Model Only)* Attach the anchor post to the stepper. See **Detail C**. Attach as shown in the detail. Fully tighten the connections according to tightening torque specifications.

Final Details.

Step 7: Place the stepper in, or on, its footing and plumb and level.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 8: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the appropriate label to the component where it can be visible.

UN7136 - UNITY STEPPER (SMALL)

PART NO.	DESCRIPTION	QTY.
AAU6153	BUMPER - 7.00" DIA INSERT	1
ABC0924	BRACKET - 6.69" DIA x 4.08"	1
APL2162	PLATE - 6.69" x 14 GA. w/ 4 HOLES	1
APT5254	POST - 15.70" x 15.70" x 42.18" SMALL	1
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0600	WASHER - 1" O.D. FLAT	6
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	3
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	7
BAE0922	TOOL - TT 45 L WRENCH	1
BPL3180	SOFT ROCK - SMALL	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

UN7136S - UNITY STEPPER (SMALL) SM

PART NO.	DESCRIPTION	QTY.
AAU6153	BUMPER - 7.00" DIA INSERT	1
ABC0924	BRACKET - 6.69" DIA x 4.08"	1
APL2162	PLATE - 6.69" x 14 GA. w/ 4 HOLES	1
APT5299	POST - 15.70" x 15.70" x 8.00" SMALL (SM)	1
BAE0595	WASHER - 3/8" SAE FLAT	4
BAE0665	BOLT - 3/8"-16 x 1-3/4" BUTTON HEAD - SS	4
BAE0922	TOOL - TT 45 L WRENCH	1
BPL3180	SOFT ROCK - SMALL	1
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance Universal Models UN7136 and UN7136S Unity Stepper (Small) In-Ground and Surface Mount



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

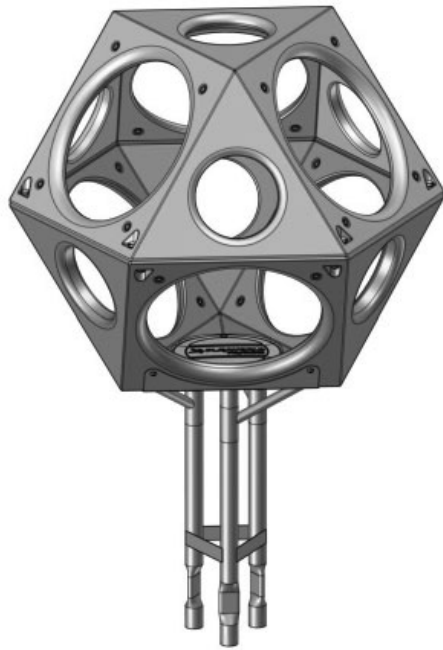
Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

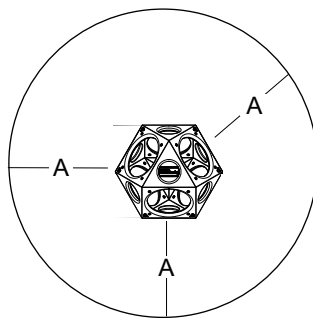
MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Assembly View (representative model)



Equipment Use Zone
A - (ASTM) 72 in. (1830 mm)
(CSA) 1800 mm
(EN) 1500 mm

Installation Instructions

Universal Models UN8727 and UN8727S


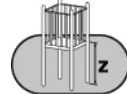

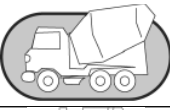



Ground Level PlayCube

In-Ground and Surface Mount

Installation Preparation

Recommended Crew: Two (2) adults
Installation Time (In-Ground): 1.5 man-hours
Installation Time (Surface Mount): 1 man-hour
Concrete Required: 0.12 cubic yard (0,09 cubic meters)
Use Zone: See the master layout drawing
User Group Age (single cube): ASTM/CSA: 2-12, EN: 2-14
User Group Age (multiple cubes): ASTM/CSA: 5-12, EN: 6-14

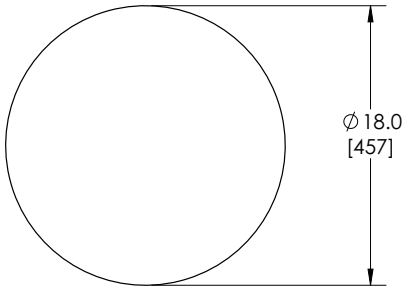
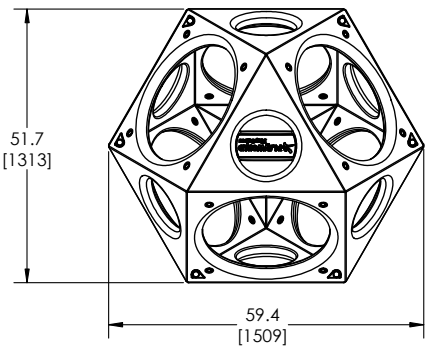
ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

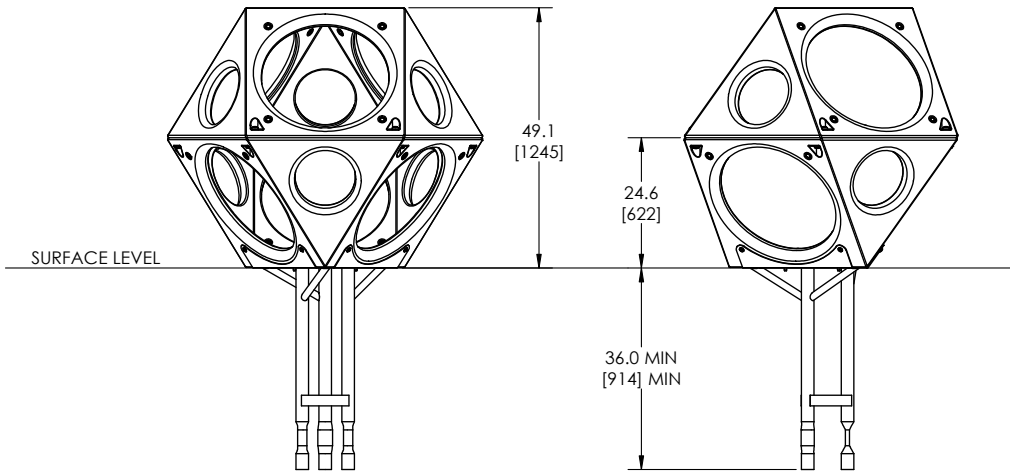
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

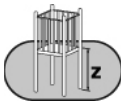
Top View



Footing Diagram



Elevation Views
UN8727



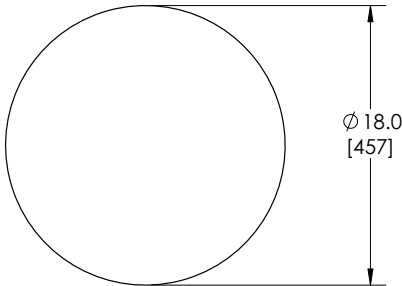
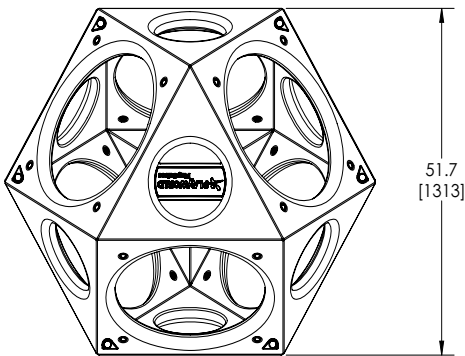
49" (1245 mm)
Footed as shown



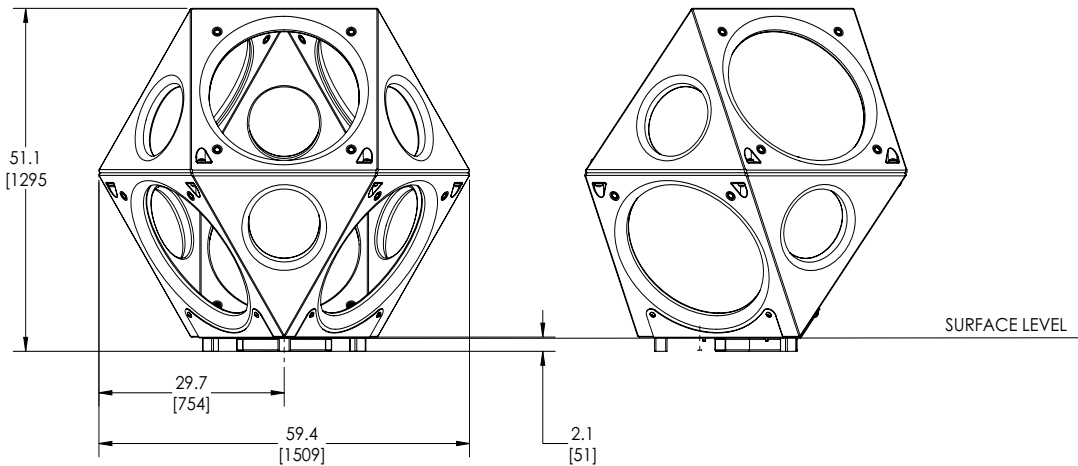
Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

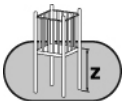
Top View



Footing Diagram



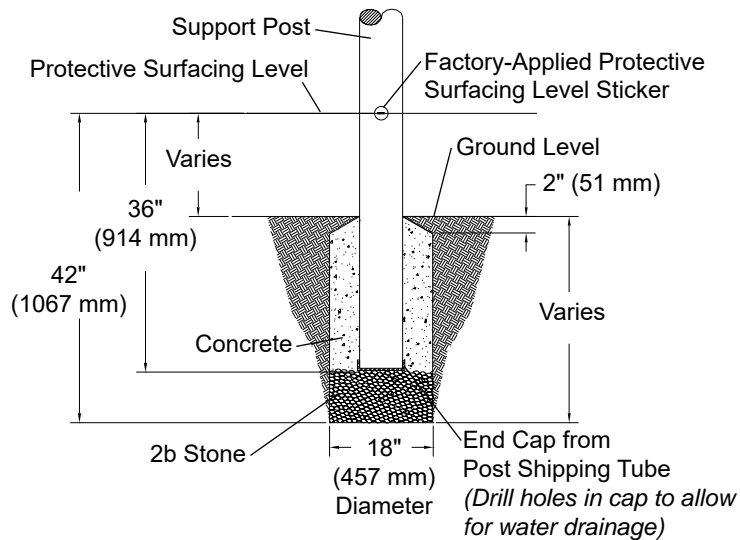
Elevation Views
UN8727S



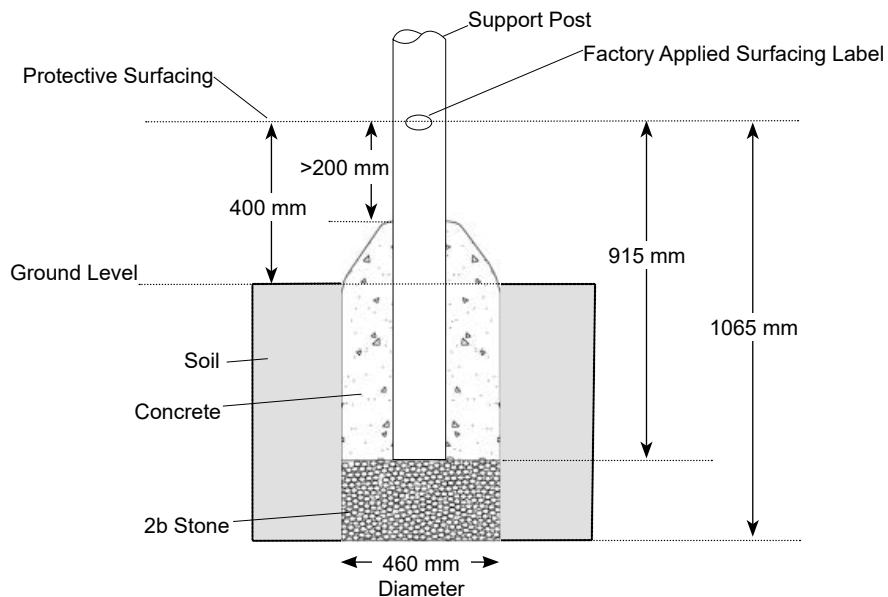
49" (1245 mm)
Footed as shown



Installation Instructions



Support Post Footing Detail (ASTM/CSA)

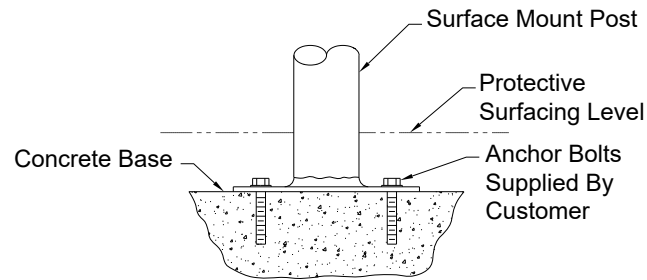


Footing Detail Support Post (EN)

FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.
- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

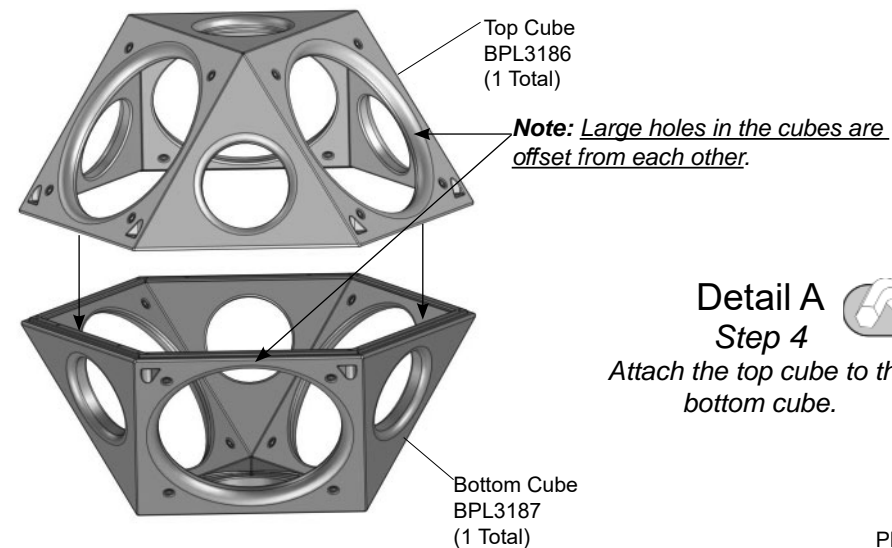
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

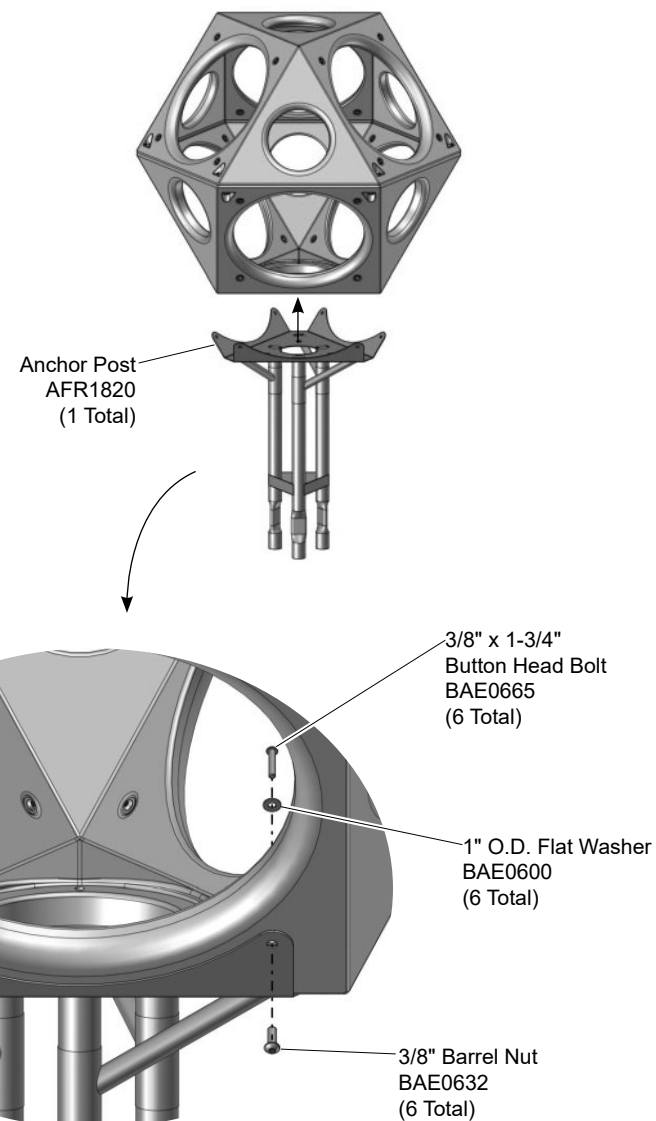
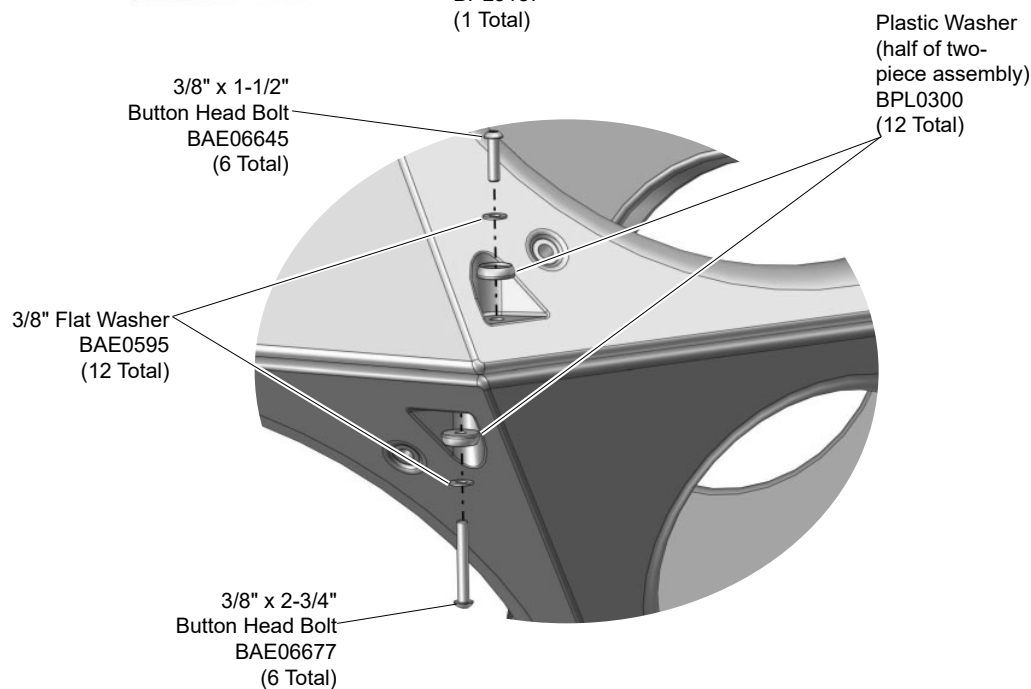
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 10.



Detail A Step 4

Attach the top cube to the bottom cube.



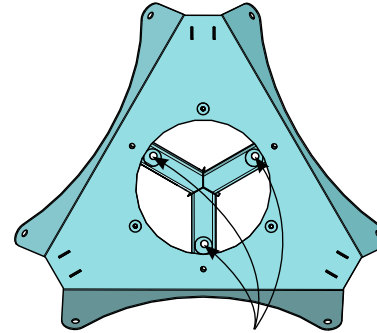
Detail B Step 5

(In-Ground Model)

Attach the anchor post to the bottom cube.

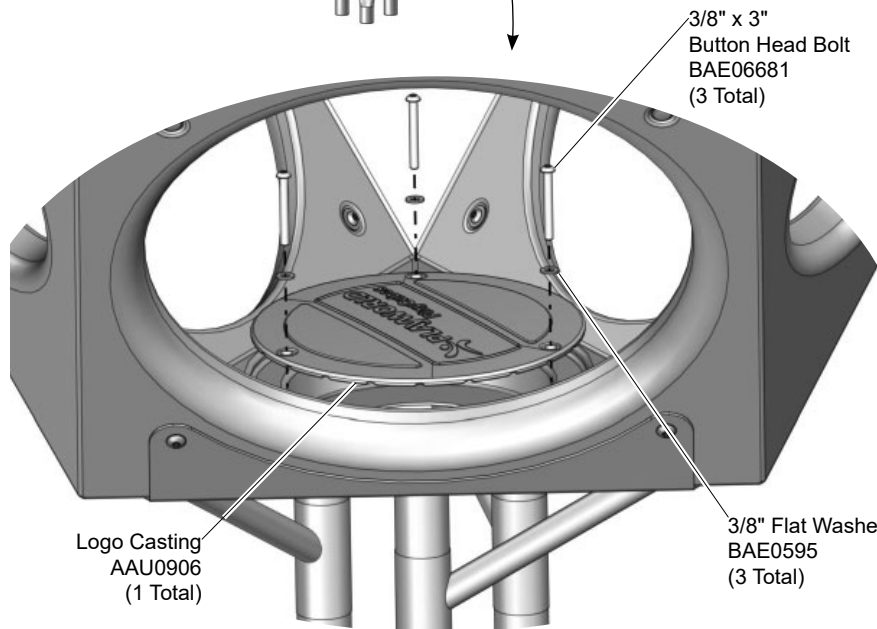
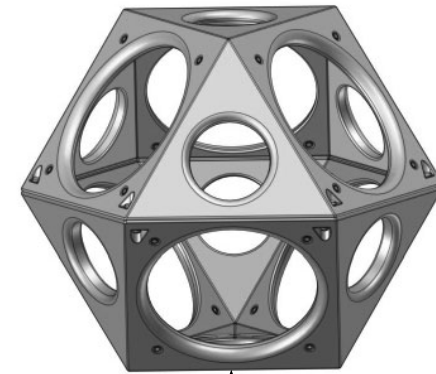
Installation Instructions

Top View of AFR1874



Using surface mount hardware supplied by the customer, affix to pad at the three footer locations.

Anchor Frame
AFR1874
(1 Total)

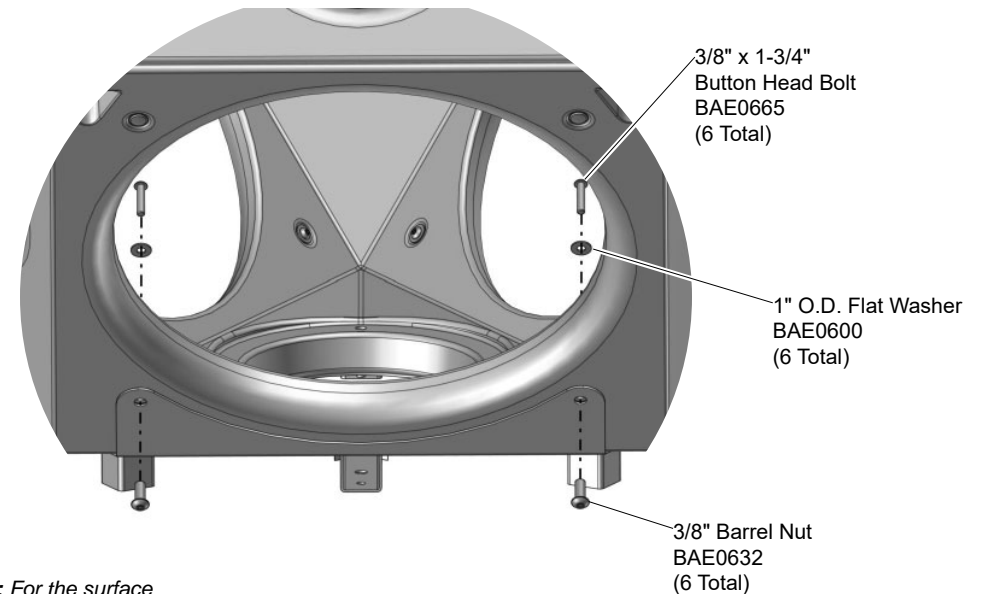


Detail C
Step 6

(In-Ground Model)

Attach the logo casting to the bottom cube.

Note: For the surface mount model do not attach the logo casting until the component has been secured on its footing.

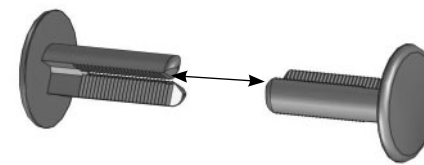
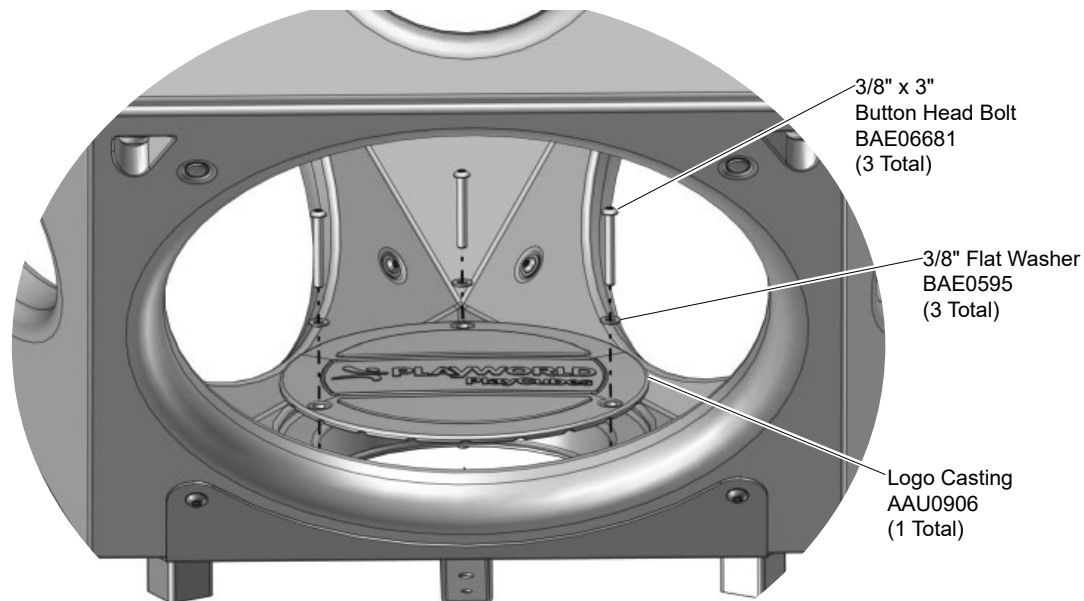


Detail D
Step 7

(Surface Mount Model)

Attach the anchor frame to the bottom cube.

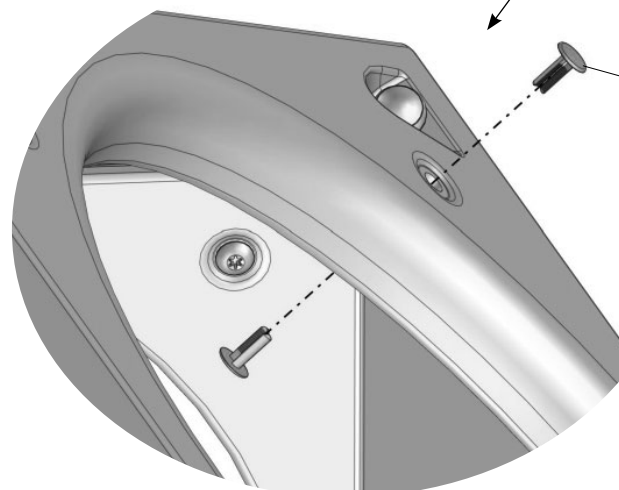
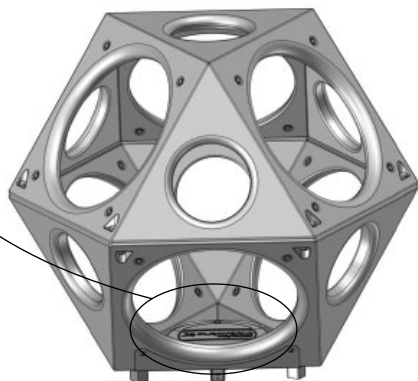
Installation Instructions



Detail E
Step 9



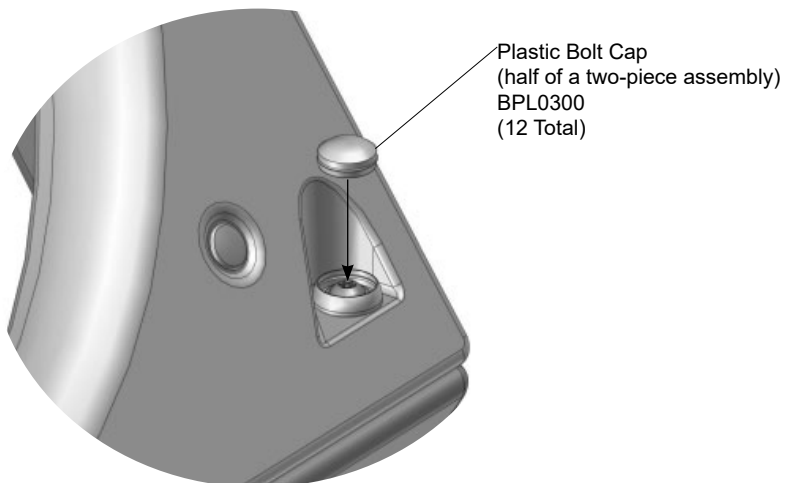
(Surface Mount Model)
Attach the logo casting to the bottom cube.



Detail F
Step 10

*Fill in the unused holes **inside** and **outside** the ground level cube.*

Installation Instructions



Detail G

Step 11

Insert the bolt caps into the plastic washers.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete. Do not install bolt caps until the structure is completely assembled and properly footed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate, or prepare, the footings as shown in the **Support Post Footing Details or Surface Mount Footing Detail** on pages 4 and 5 of this installation document.

Step 4: Attach the top cube to the bottom cube. See **Detail A**. Place the top cube onto the bottom cube making sure the large holes are offset and attach as shown. Fully tighten the connections according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Note: Steps 5 and 6 refer only to the in-ground model.

Step 5: Attach the anchor post to the bottom cube. See **Detail B**. Position the top of the anchor post against the bottom of the cube assembly and attach as shown. Fully tighten the connections according to tightening torque specifications.

Step 6: Attach the logo casting to the bottom cube. See **Detail C**. Place the casting on the inside bottom of the cube assembly and attach as shown.

Note: Step 7 refers only to the surface mount model.

Step 7: Attach the anchor frame to the bottom cube. See **Detail D**. Position the top of the anchor frame against the bottom of the cube assembly and attach as shown.

Final Details.

Step 8: Finish assembling the structure. Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Hardware Note: Extra hardware is provided for attachment of an above ground PlayCube.

Step 9: Attach the logo casting to the bottom cube. See **Detail E**. Place the casting on the inside bottom of the cube assembly and attach as shown. Fully tighten the connections according to tightening torque specifications.

Step 10: Fill in the unused **inside** and **outside** holes in the ground level cube. See **Detail F**. After the equipment assembly is complete, install a ratchet rivet in each unused open hole in the cube. Insert the rivet into the hole and press in place. Make sure to insert the rivets so they interlock as shown in the reference. **Note:** This step should be executed after structure has been assembled and properly footed.

Step 11: Insert the bolt caps into the plastic washers. See **Detail G**. Select the plastic caps and press over the plastic flanged washers.

Note: The plastic caps install easier when they are warm.

Step 12: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.

UN8727 - GROUND LEVEL PLAYCUBE

PART NO.	DESCRIPTION	QTY.
AAU0906	CASTING - PLAYCUBES LOGO	1
AFR1820	POST - 32.48" x 28.44" x 42.28	1
BAE0595	WASHER - 3/8" SAE FLAT	15
BAE0600	WASHER - 1" O.D. FLAT	6
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	6
BAE0665	BOLT - 3/8"-16 x 1.75" BUTTON HEAD - SS	6
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	6
BAE06677	BOLT - 3/8"-16 x 2.75" BUTTON HEAD - SS	6
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	3
BPL0300	CAP - 3/8" BOLT	12
BPL3186	PLAYCUBES - TOP CUBE	1
BPL3187	PLAYCUBES - BOTTOM CUBE	1
BPL3194	RIVET - RATCHET - .88" O.D. x 1.67"	36
ALB0025	LABEL - AGE APPROPRIATE SHEET	1

UN8727S - GROUND LEVEL PLAYCUBE SURFACE MOUNT

PART NO.	DESCRIPTION	QTY.
AAU0906	CASTING - PLAYCUBES LOGO	1
AFR1874	FRAME - 32.48" x 28.67" x 6.35"	1
BAE0595	WASHER - 3/8" SAE FLAT	15
BAE0600	WASHER - 1" O.D. FLAT	6
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	6
BAE0665	BOLT - 3/8"-16 x 1.75" BUTTON HEAD - SS	6
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06645	BOLT - 3/8"-16 x 1.50" BUTTON HEAD - SS	6
BAE06677	BOLT - 3/8"-16 x 2.75" BUTTON HEAD - SS	6
BAE06681	BOLT - 3/8"-16 x 3.00" BUTTON HEAD - SS	3
BPL0300	CAP - 3/8" BOLT	12
BPL3186	PLAYCUBES - TOP CUBE	1
BPL3187	PLAYCUBES - BOTTOM CUBE	1
BPL3194	RIVET - RATCHET - .88" O.D. x 1.67"	36
ALB0025	LABEL - AGE APPROPRIATE SHEET	1



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570-522-9800 OUTSIDE U.S.
1000 Buffalo Road • Lewisburg, PA 17837
www.playworldsystems.com

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Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Castings

- Inspect the aluminum castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in, or on, the footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

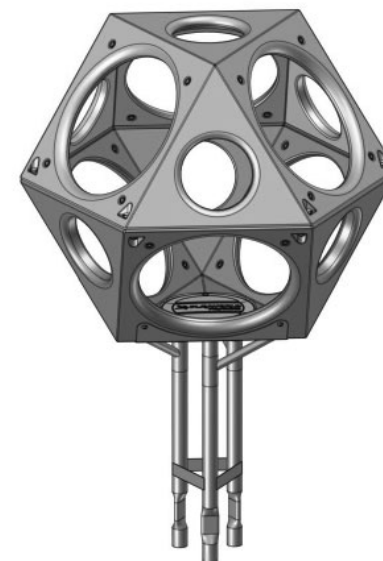
Equipment Maintenance

Universal

Models UN8727 and UN8727S

Ground Level PlayCube

In-Ground and Surface Mount



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

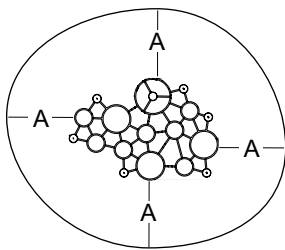
Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___





Assembly View (representative structure)



Equipment Use Zone
 A - (ASTM) 72 in. (1830 mm)
 (CSA) 1800 mm
 (EN) 1985 mm

Installation Instructions

Playworld Systems®

Models XX0187 and XX0187S

Unity Large Overhead Canopy

In-Ground and Surface Mount

Installation Preparation

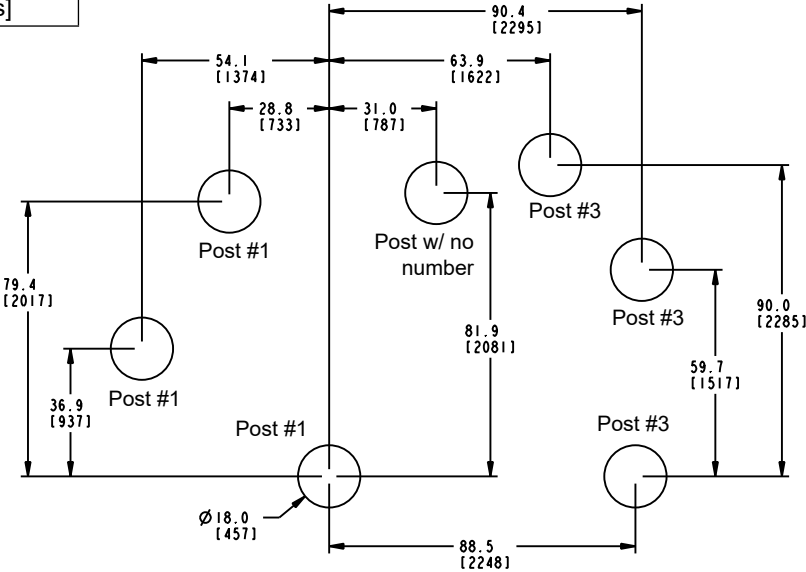
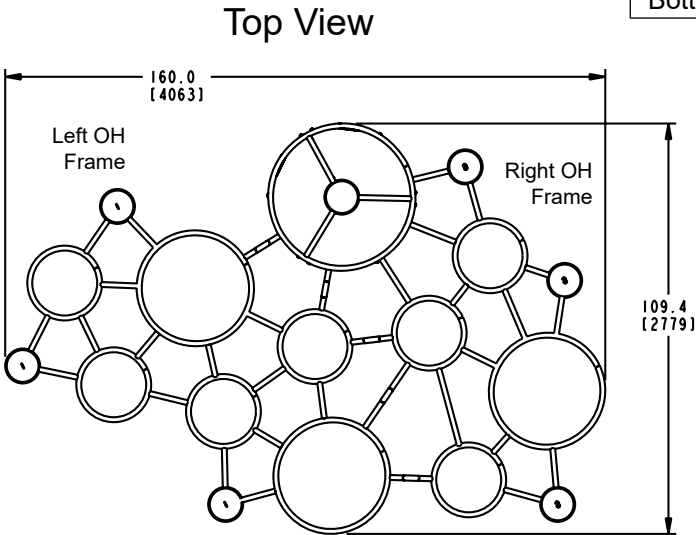
Recommended Crew: Three (3) adults
 Installation Time (In-Ground): 9.5 man-hours
 Installation Time (Surface Mount): 6 man-hours
 Concrete Required: 0.84 cubic yard (0,63 cubic meters)
 Use Zone: Refer to the information below
 User Group Age (years): ASTM/CSA: 5-12, EN: 6-14

ICON KEY

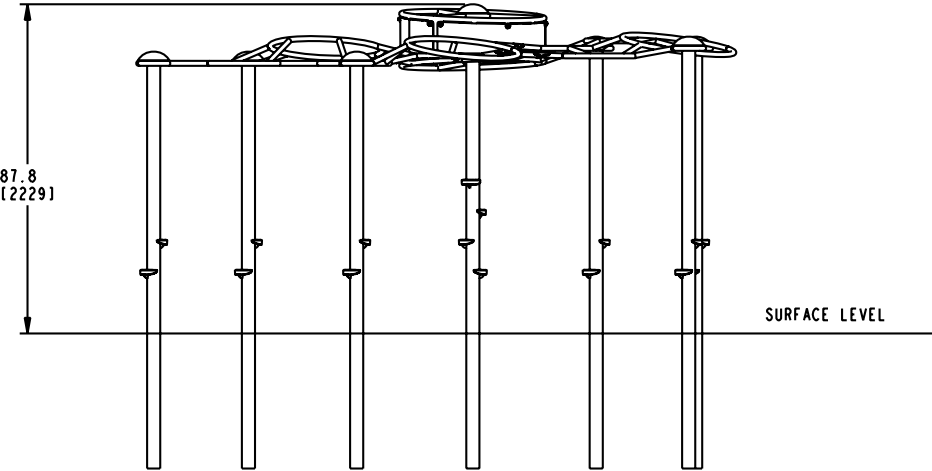
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

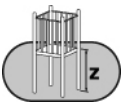
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram



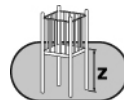
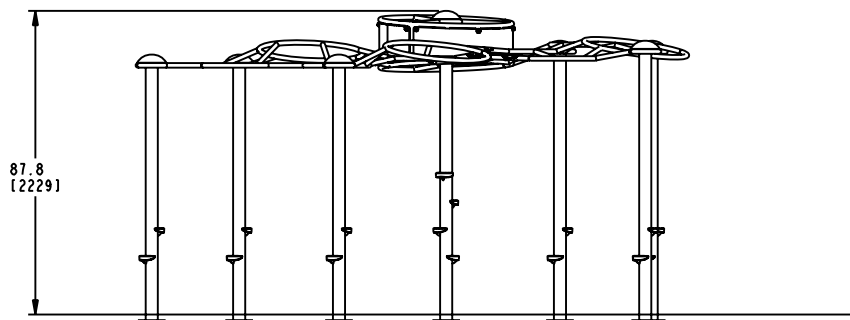
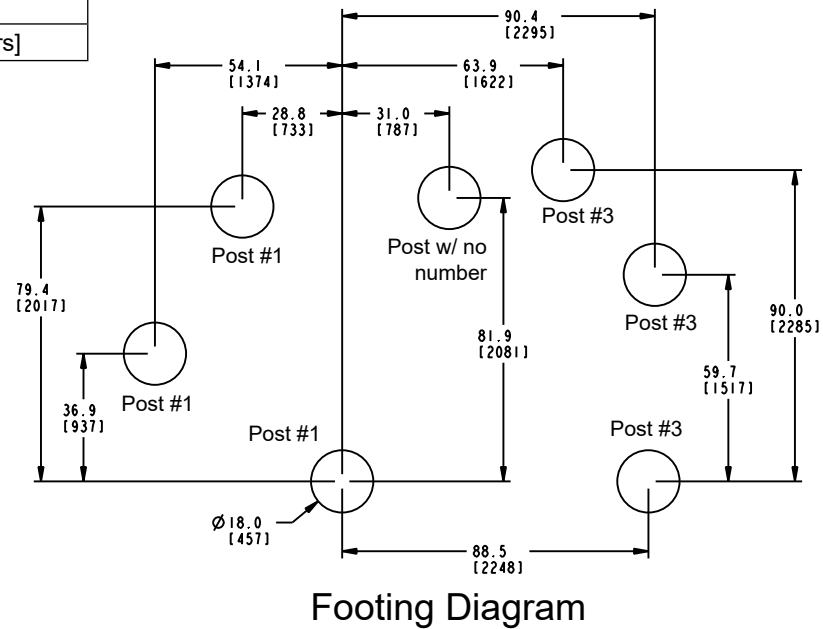
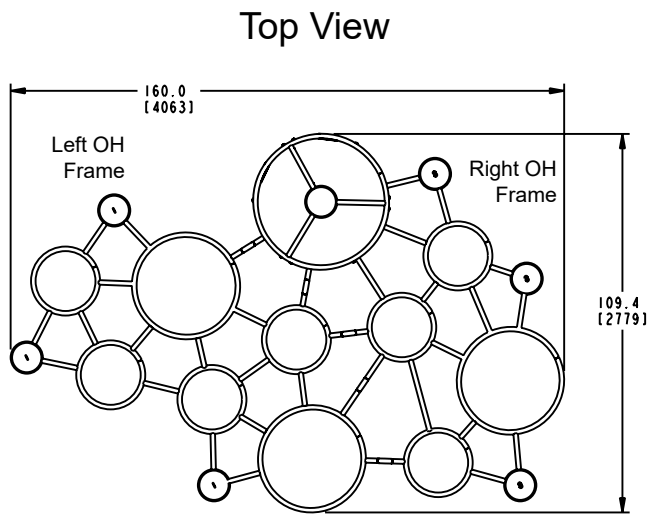
Elevation Views
XX0187



ASTM: 87.8" (2229 mm)
CSA: 2229 mm
EN: 2229 mm

Installation Instructions

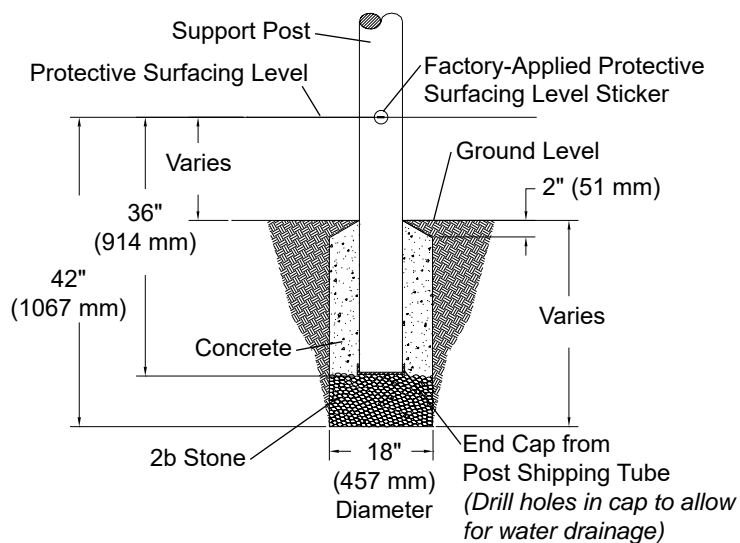
KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



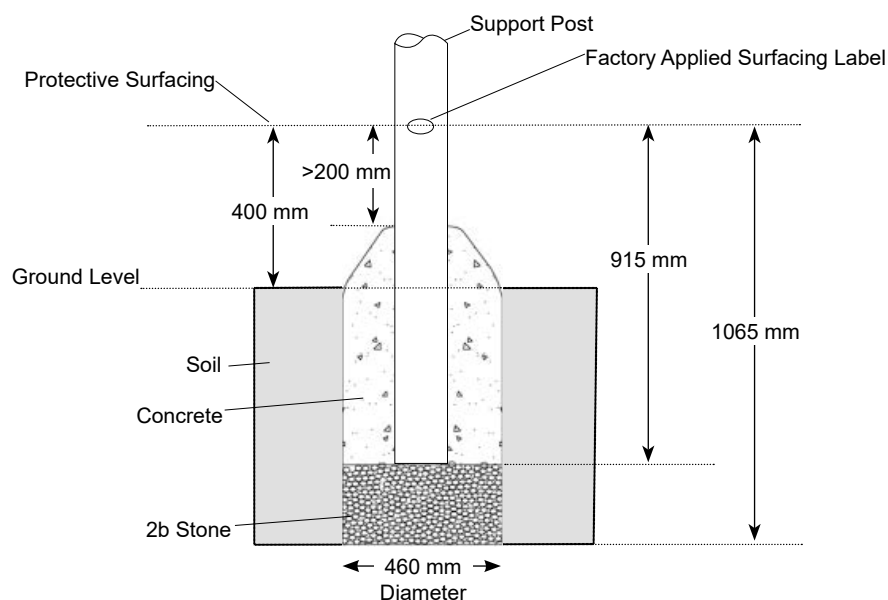
ASTM: 87.8" (2229 mm)
CSA: 2229 mm
EN: 2229 mm

Elevation Views
XX0187S

Installation Instructions



Support Post Footing Detail (ASTM/CSA)



Footing Detail Support Post (EN)

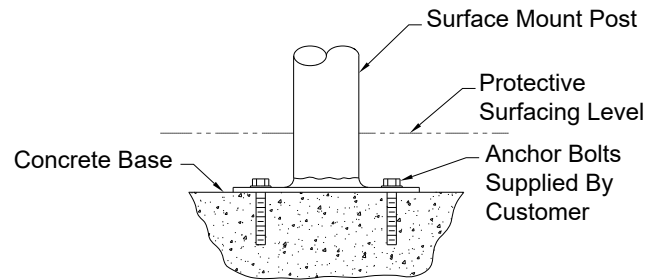
FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.

Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions. For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Installation Instructions



Surface Mount Footing Detail

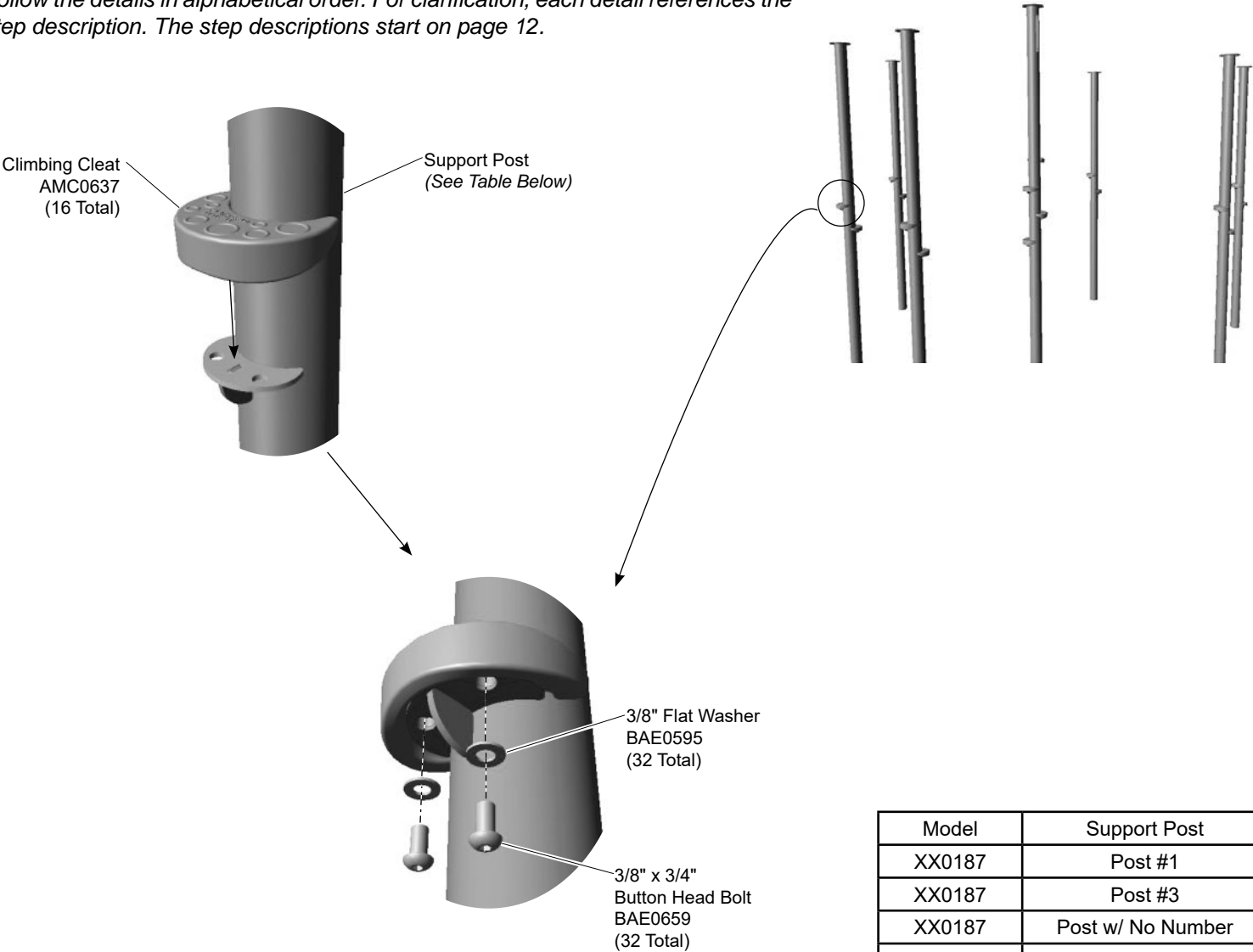
FOOTING NOTES

- All support posts and component support legs may have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.
- Comparison of protective surfacing materials is available in [Handbook for Public Playground Safety](#) published by U. S. Consumer Product Safety Commission.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 12.



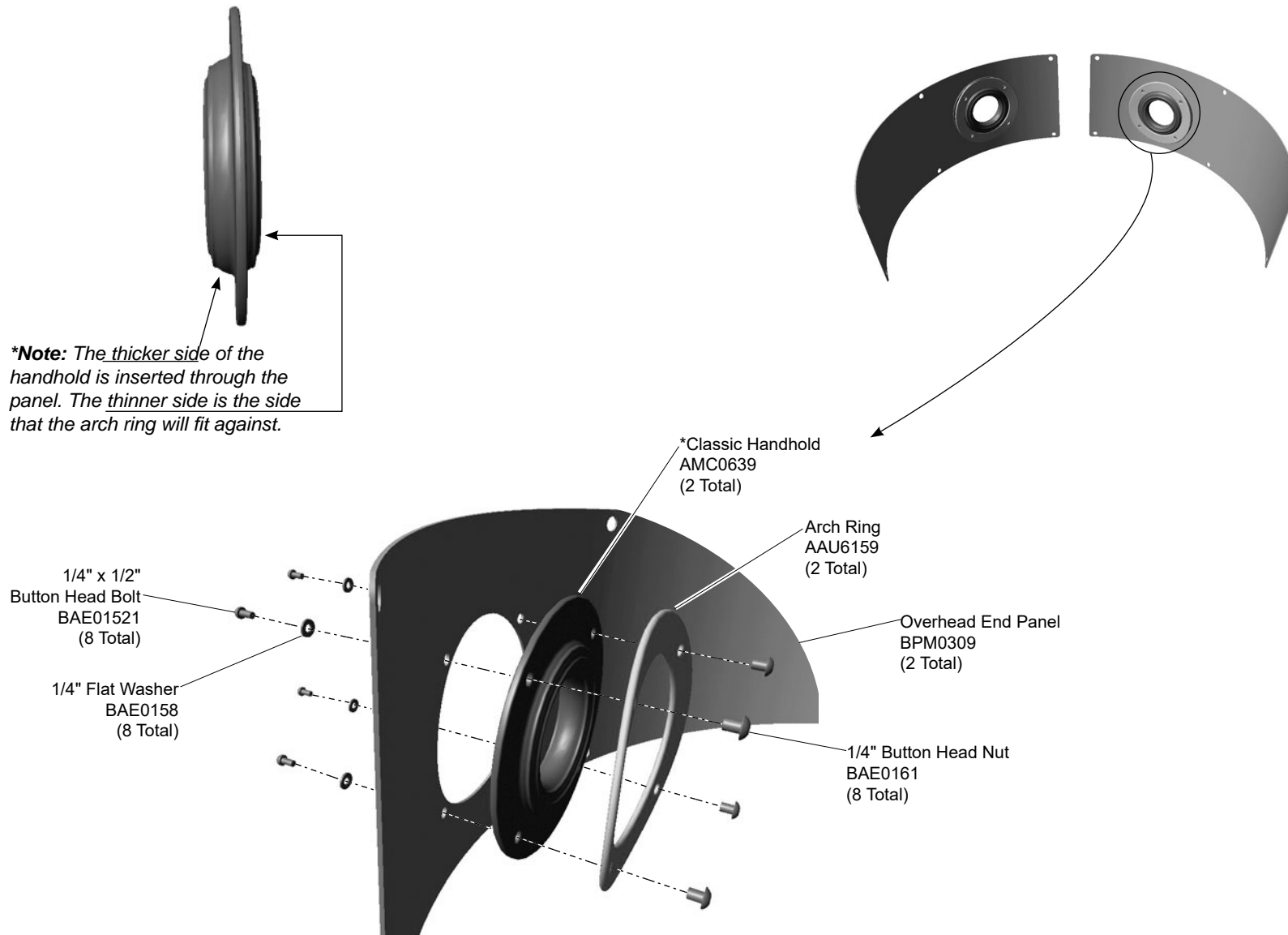
Detail A Step 4

Attach the cleats to the support posts.

Model	Support Post	Part Number	Quantity
XX0187	Post #1	APT5249	3
XX0187	Post #3	APT5251	3
XX0187	Post w/ No Number	APT5248	1
XX0187S	Post #1	APT5242	3
XX0187S	Post #3	APT5244	3
XX0187S	Post w/ No Number	APT5241	1



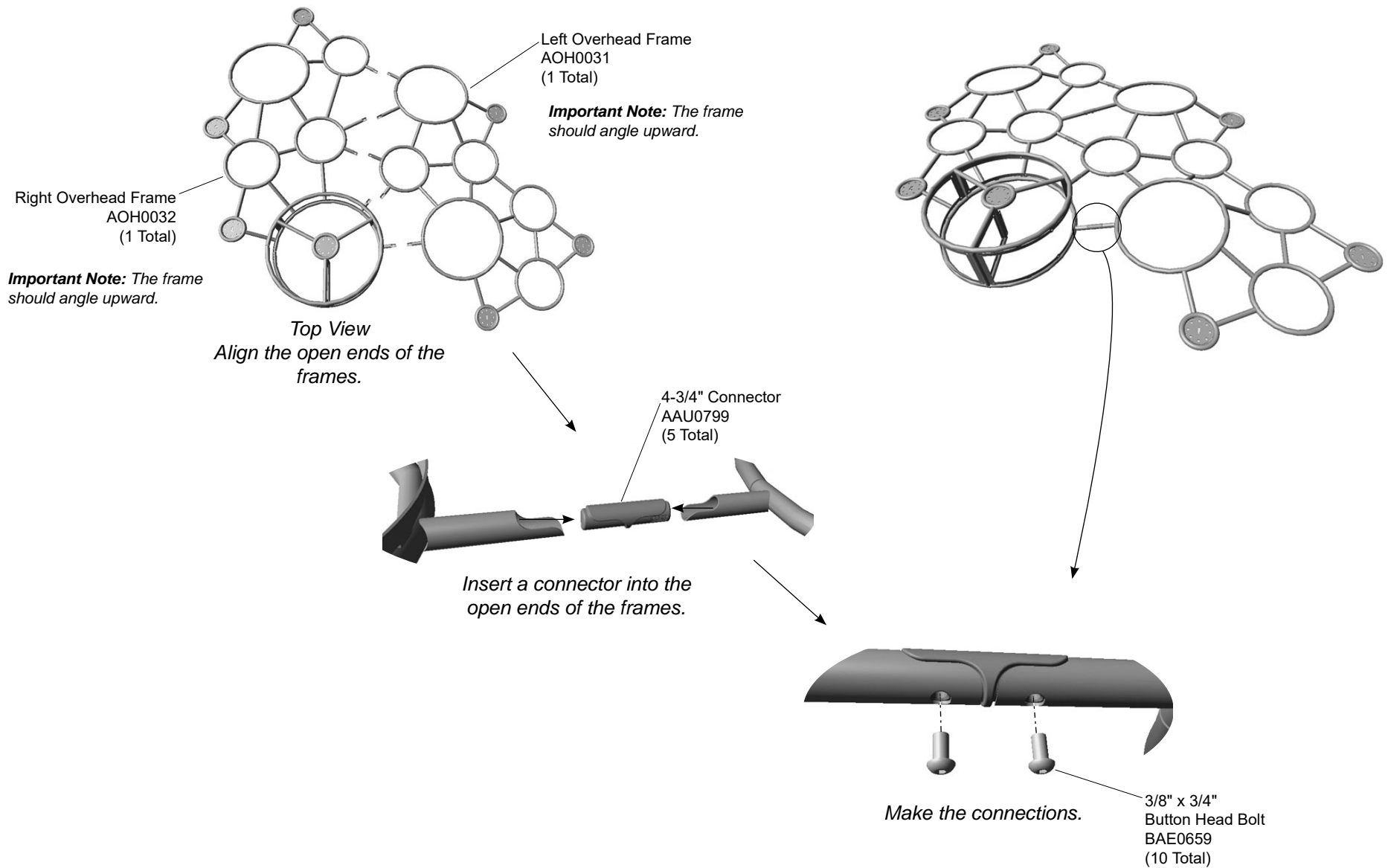
Installation Instructions



Detail B Step 5

Attach the handholds to the overhead end panels.

Installation Instructions

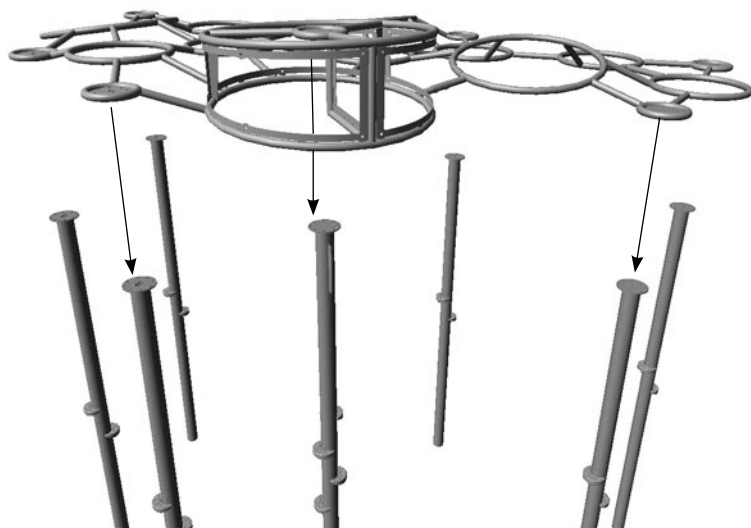


Detail C
Step 6

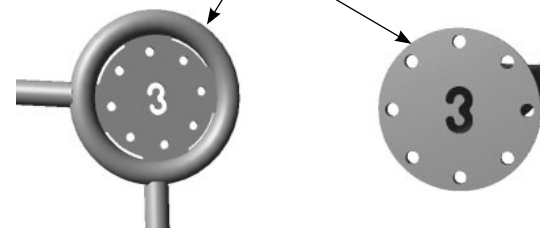


Attach the overhead frames together.

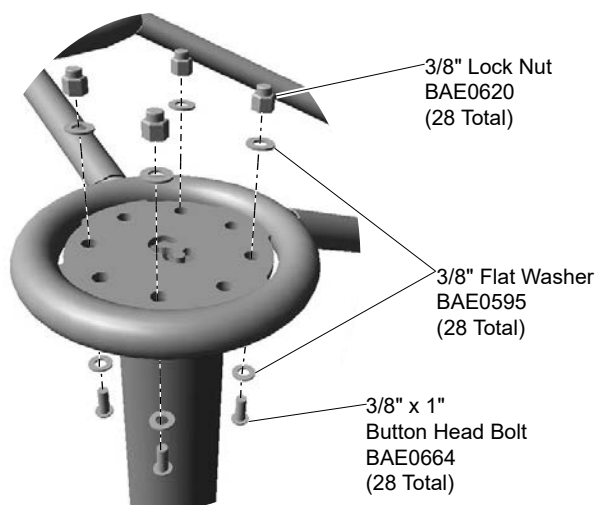
Installation Instructions



Example: Frame with a 3 stamped in its plate attaches to the post with a 3 stamped in its top.

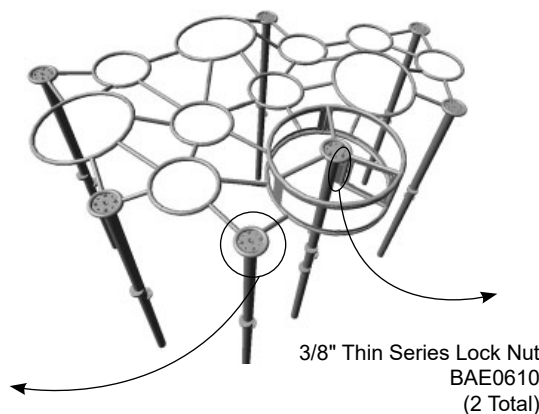


Important Note: Posts #'s 1 & 3 have their number stamped in the plate on top of the post. This number will then correspond with the number stamped into mounting plates on the overhead canopy frames. Match the frame to its corresponding posts.



Detail D-1

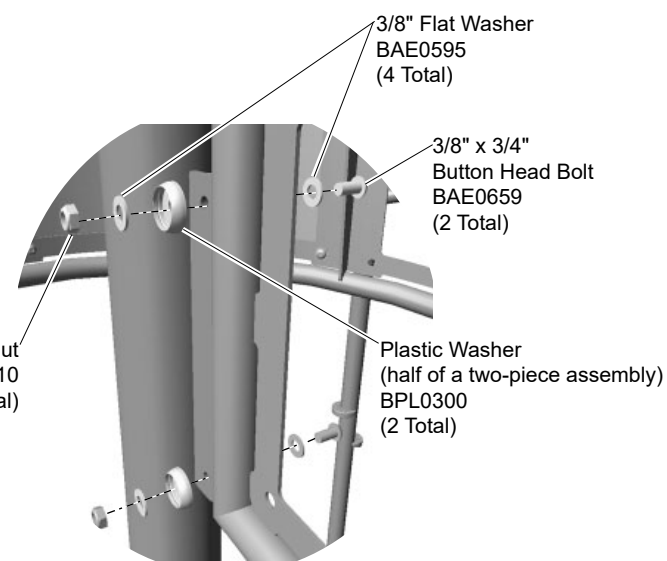
Attach the overhead frames to the support posts.



Details D-1 and D-2

Step 7

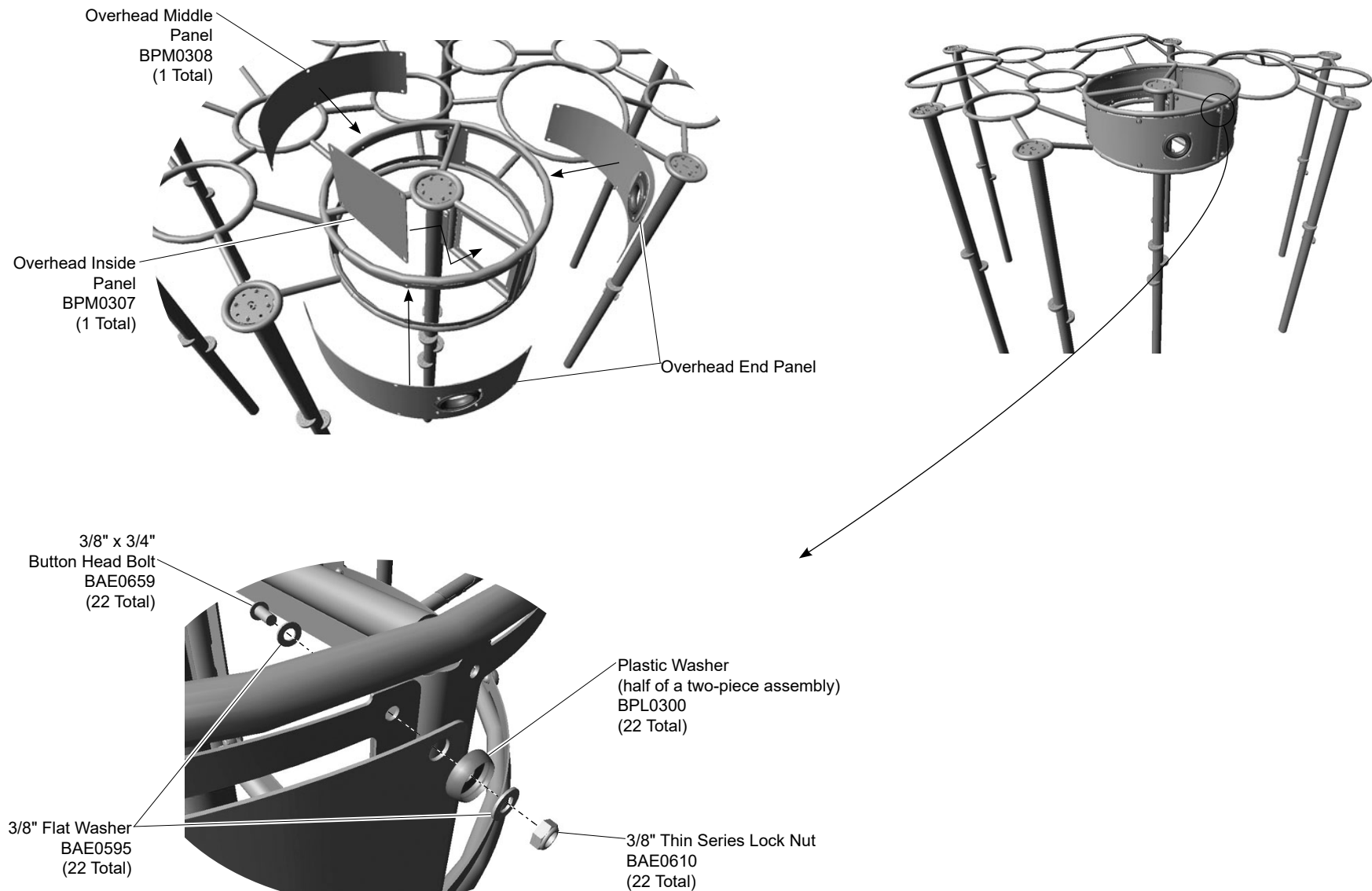
Attach the overhead frames to the support posts.



Detail D-2

Attach the arch ring frame to the support post with no number.

Installation Instructions

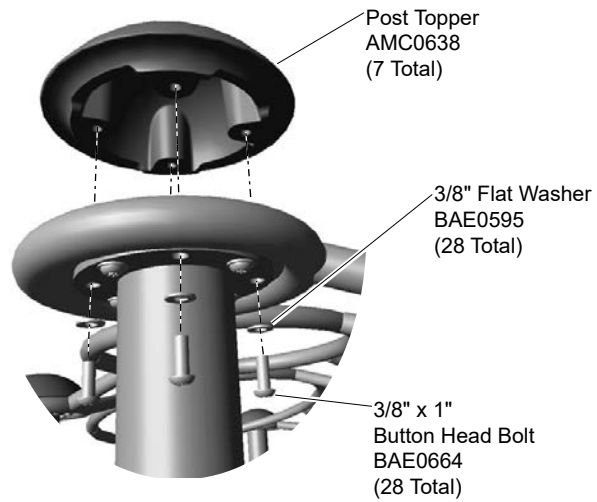


Detail E Step 8



Attach the steel panels to the arch ring frame.

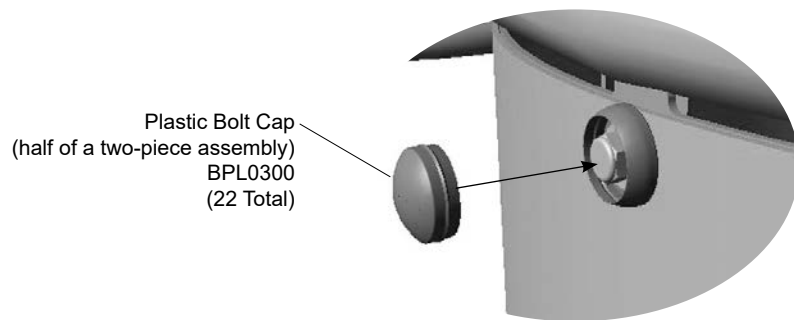
Installation Instructions



Detail F
Step 10



Attach the post topper to the support posts.



Detail G
Step 11

Press the bolt caps into the plastic washers.

Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete unless otherwise instructed. Do not install bolt caps until the structure is completely assembled and properly footed.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate or prepare the footings as shown on page 4-5 of this document. Use the **Support Post Footing Detail** the in-ground model.

Step 4: Attach the cleats to the support posts. See **Detail A**. Place a cleat over each bracket on the support posts and attach as shown. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Step 5: Attach the handholds to the overhead end panels. See **Detail B**. Attach the handholds to the end panels as shown making sure to insert the thicker center part of the handhold through the end panel first. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Step 6: Attach the overhead frames together. See **Detail C**. Position the overhead frames next to each other as shown, insert a connector into the open ends of the frames and attach as shown.

Step 7: Attach the overhead frames to the support posts. See **Details D-1 and D-2**. Place the support posts in, or on, their designated footings and block and brace in place. See the **Footing Diagram** and **Top View** for location of the posts and frames respectively. With adequate manpower place the frame assembly on top of the posts and attach as shown. Note the attachment of the arch ring frame to the support post with no number.

Important Note: Posts #'s 1 & 3 have their number stamped in the plate on top of the post. This number will then correspond with the number stamped into mounting plates on the overhead canopy frames. Match the frame to its corresponding posts. See the **Example** on the same page.

Step 8: Attach the steel panels to the arch ring frame on the right overhead frame. See **Detail E**. Locate the panels against the arch ring frame and attach as shown. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

In-Ground: Block and brace for concrete. Pour concrete after all equipment has been assembled. Allow 72 hours for concrete to completely cure.

Surface Mount: Bolt down all surface mount supports in accordance with specifications provided by your registered structural engineer.

Important Note: Surface mount hardware is not supplied. Customer is responsible for concrete base and for providing surface mount hardware as specified by a registered structural engineer for each specific project application.

Step 10: Attach the post topper to the support posts. See **Detail F**. Place a post topper on top of each support post and attach as shown. Fully tighten the connections according to tightening torque specifications (See **Final Details**).

Step 11: Press the bolt caps into the plastic washers. See **Detail G**. Press a bolt cap into each plastic flanged washer as shown.

Note: The plastic caps install easier when they are warm.

Step 12: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the appropriate label to the component at eye level.

XX0187 - UNITY LARGE OVERHEAD CANOPY

PART NO.	DESCRIPTION	QTY.
AAU0799	CONNECTOR - 1.375" O.D. x 4.75" THREADED HOLES	5
AAU6159	RING - 9.50" O.D. x .25" - ARCH	2
AMC0637	CLIMBING CLEAT	16
AMC0638	POST TOPPER	7
AMC0639	NEW CLASSIC HANDHOLD	2
AOH0031	OVERHEAD - NEW CLASSICS - LEFT	1
AOH0032	NEW CLASSICS OVERHEAD - FRAME	1
APT5248	POST - 6.00" O.D. x 120.50" w/CLEATS	1
APT5249	POST - 6.00" O.D. x 107.88" w/CLEATS	3
APT5251	POST - 6.00" O.D. x 111.88" w/CLEATS	3
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	8
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	8
BAE0595	WASHER - 3/8" SAE FLAT	164
BAE0610	NUT - 3/8"-16 THIN LOCK	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	28
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	66
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	56
BAE0900	WRENCH - 5/32" SHORT HEX KEY	1
BAE0902	TOOL - 7/32" SHORT HEX KEY WRENCH	1
BAE0922	TOOL - TT 45 L WRENCH	1
BPL0300	CAP - 3/8 BOLT	24
BPM0307	PANEL - 12.79" x 12.94"	1
BPM0308	PANEL - OVERHEAD MIDDLE	1
BPM0309	PANEL - OVERHEAD ENDS	2
ASY0590	LABEL KIT - 5 YRS - 12 YRS ASTM, CSA, FRENCH	1

XX0187S - UNITY LARGE OVERHEAD CANOPY SM

PART NO.	DESCRIPTION	QTY.
AAU0799	CONNECTOR - 1.375" O.D. x 4.75" THREADED HOLES	5
AAU6159	RING - 9.50" O.D. x .25" - ARCH	2
AMC0637	CLIMBING CLEAT	16
AMC0638	POST TOPPER	7
AMC0639	NEW CLASSIC HANDHOLD	2
AOH0031	OVERHEAD - NEW CLASSICS - LEFT	1
AOH0032	NEW CLASSICS OVERHEAD - FRAME	1
APT5241	POST - 8.00" DIA x 86.38" w/CLEATS	1
APT5242	POST - 8.00" DIA x 73.75" w/CLEATS	3
APT5244	POST - 8.00" DIA x 77.75" w/CLEATS	3
BAE01521	BOLT - 1/4"-20 x 1/2" BUTTON HEAD - SS	8
BAE0158	WASHER - 1/4" SAE FLAT	8
BAE0161	NUT - 1/4"-20 x 7/16" BUTTON HEAD	8
BAE0595	WASHER - 3/8" SAE FLAT	164
BAE0610	NUT - 3/8"-16 THIN LOCK	24
BAE0620	NUT - 3/8"-16 LOCK w/NYLON CAP	28
BAE0659	BOLT - 3/8"-16 x 3/4" BUTTON HEAD - SS	66
BAE0664	BOLT - 3/8"-16 x 1" BUTTON HEAD - SS	56
BAE0900	WRENCH - 5/32" SHORT HEX KEY	1
BAE0902	TOOL - 7/32" SHORT HEX KEY WRENCH	1
BAE0922	TOOL - TT 45 L WRENCH	1
BPL0300	CAP - 3/8 BOLT	24
BPM0307	PANEL - 12.79" x 12.94"	1
BPM0308	PANEL - OVERHEAD MIDDLE	1
BPM0309	PANEL - OVERHEAD ENDS	2
ASY0590	LABEL KIT - 5 YRS - 12 YRS ASTM, CSA, FRENCH	1



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intentionally left blank.



Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.
To repair the Eco-Armor® coating, contact the Playworld Systems' Customer Service Department for a coating repair touch-up kit.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance Playworld Systems® Models XX0187 and XX0187S Unity Large Overhead Canopy In-Ground and Surface Mount



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance ***... for Safety's Sake!***

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment **must** be installed "Step by Step" per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.
- **ASTM compliance:** The overall use zone measurements for stationary play equipment should extend a minimum of 72 inches (1829 mm) from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. The use zone of stationary play equipment may be overlapped by the use zone of adjacent stationary play equipment if the adjacent designated play surfaces are no greater than 30 inches (762 mm) above the protective surfacing level. They should be a minimum of 72 inches (1829 mm) apart. If the adjacent designated play surfaces are greater than 30 inches (762 mm) above the protective surfacing level, the pieces of equipment should be a minimum of 108 inches (2743 mm) apart.
- **CSA compliance:** The overall use zone measurements for stationary play equipment should extend a minimum of 1800 mm from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. The use zone of stationary play equipment may be overlapped by the use zone of adjacent stationary play equipment if the adjacent designated play surfaces are no greater than 700 mm above the protective surfacing level. They should be a minimum of 1800 mm apart.

- **EN compliance:** The overall use zone measurements for stationary play equipment are dependent upon the fall height of the equipment. For a fall height exceeding 1500 mm a formula is applied to determine the use zone (impact zone) of the equipment. There is a minimum of 1500 mm from its perimeter; dimensions and configuration of the use zone are dependent upon the types of included play equipment. Refer to the Use Zone diagram or master structure drawing.
- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.
- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.
- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.
- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.
- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**
- Insure that Age Appropriate and Hard Surface Warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.

Guidelines

- **IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose fill surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbency. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**

- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Critical fall heights for Europe and Canadian compliance shall be listed on the elevation page or master structure drawing if they differ from the ASTM standard. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

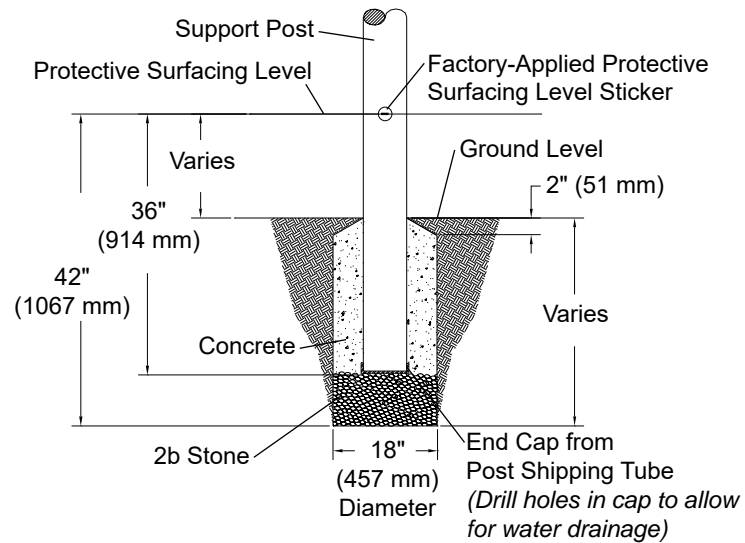
Maintenance

- Inadequate maintenance of equipment has resulted in injuries on the playground. Because the safety of playground equipment and its stability depends on good inspection and maintenance, **a comprehensive maintenance program must be developed for each playground and strictly followed.** All equipment must be inspected frequently for any potential hazards. Special attention must be given to moving parts and other components that can be expected to wear. Inspections must be carried out in a systematic manner by trained personnel. Any damaged or worn parts, or any other hazards identified during inspections must be repaired or replaced immediately. Complete documentation of all maintenance inspections and repairs must be retained.

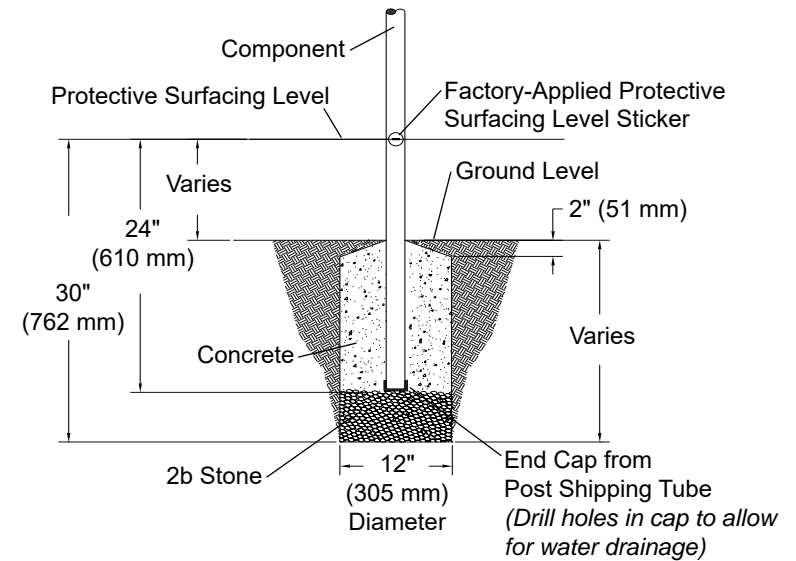
Supervision Guidelines

- Playworld Systems strongly recommends close supervision of the children as they play as well as intensive classroom and home instruction about safe behavior on playground equipment.
- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that preschool-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.

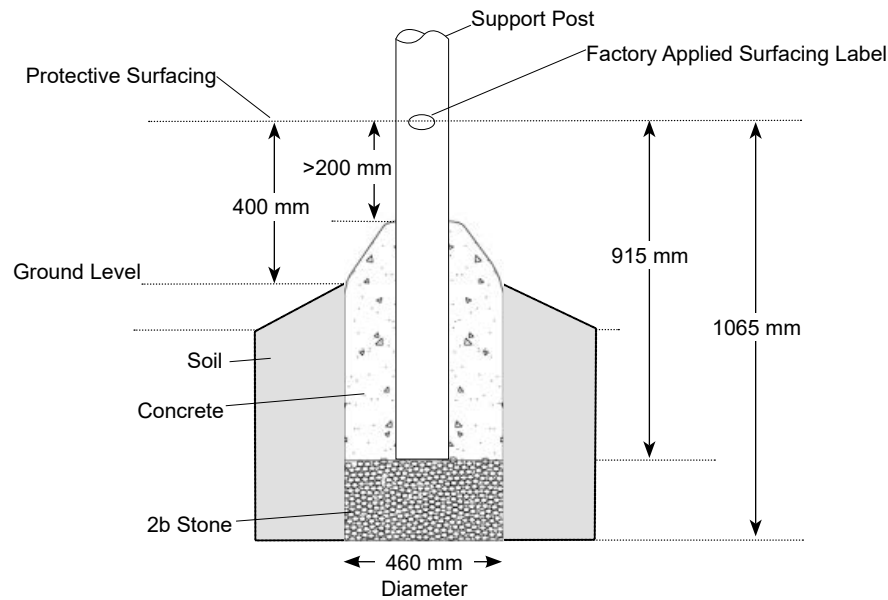
Footings Details (in ground)



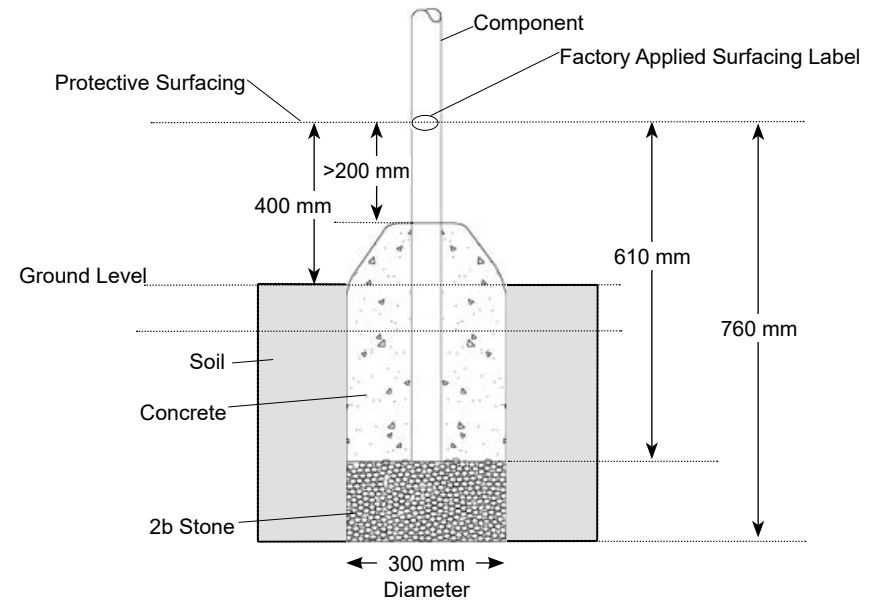
Support Post Footing Detail (ASTM/CSA)



Component Footing Detail (ASTM/CSA)

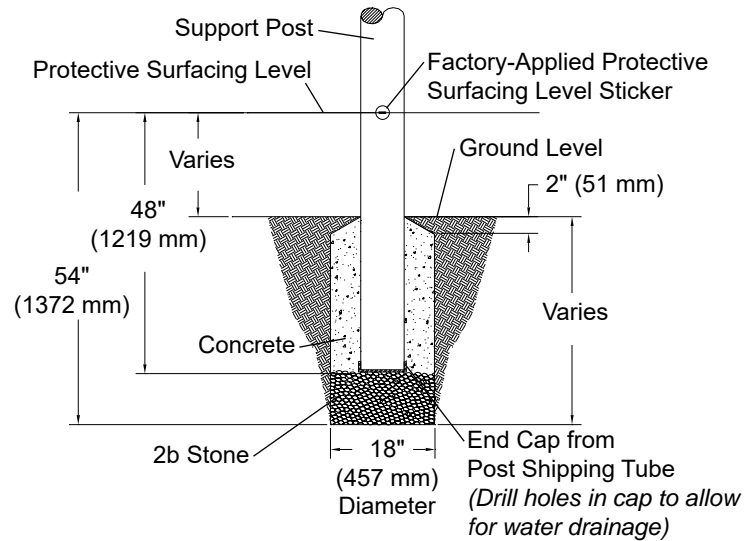


Footing Detail Support Post (EN)

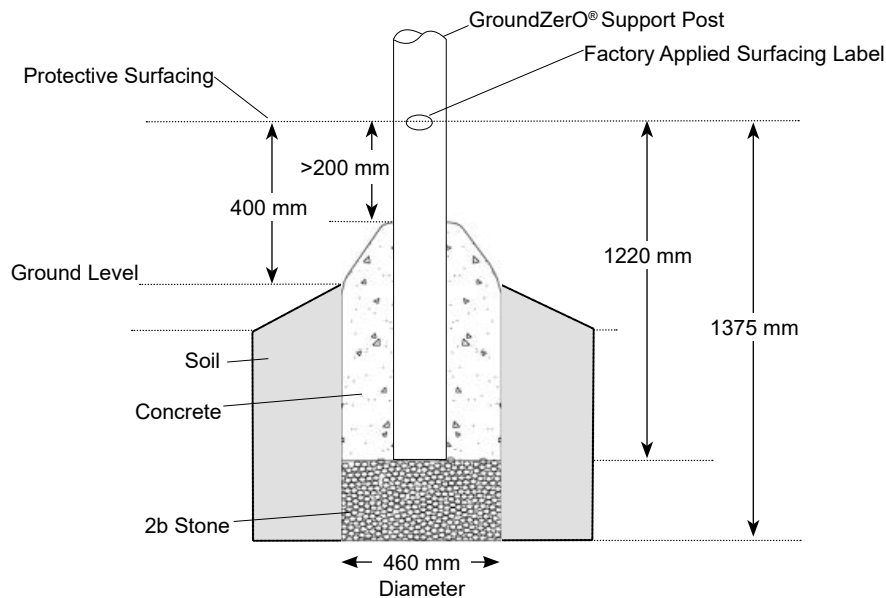


Footing Detail Component Post (EN)

Footings Notes (in ground)

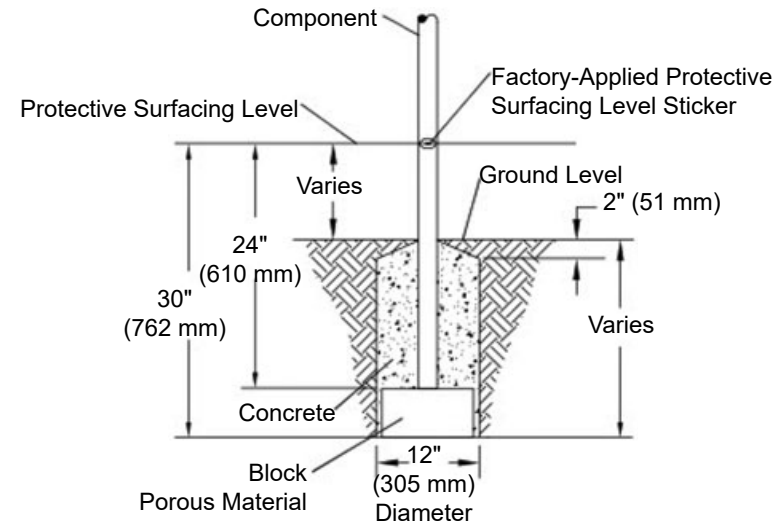


GroundZero® Support Post Footing Detail ASTM/CSA

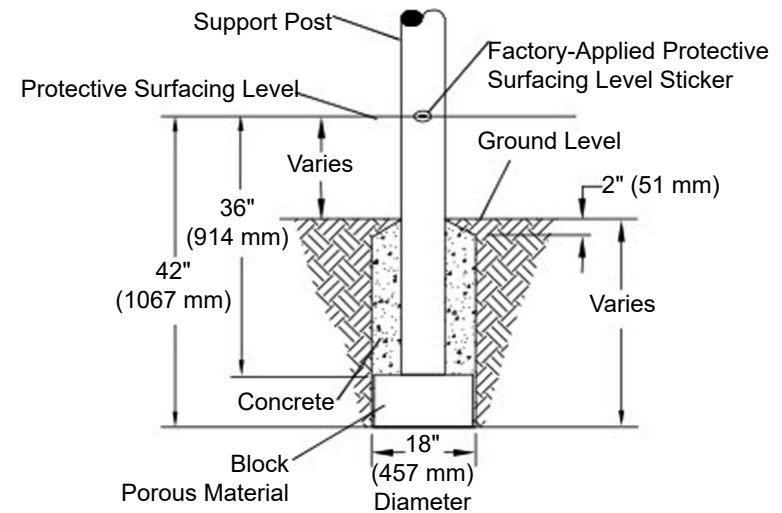


Footing Detail GroundZero® Support Post (EN)

IN GROUND FOOTING DIAGRAMS-BLOCK OPTION



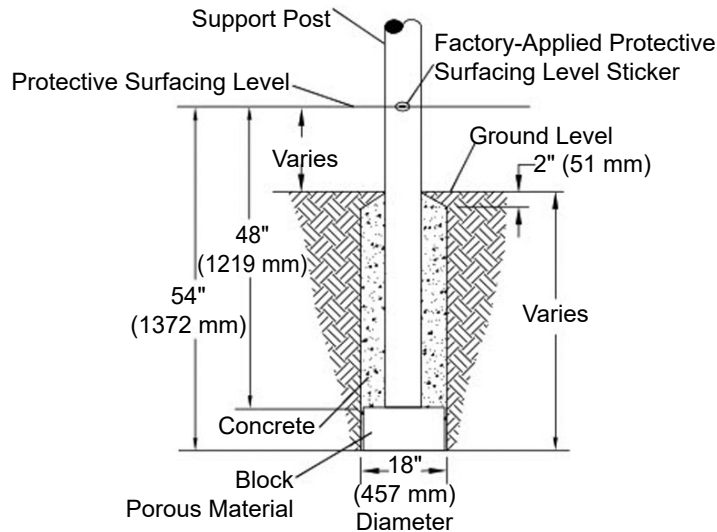
Component Footing Detail (ASTM/CSA)
Block Option



Support Post Footing Detail (ASTM/CSA)
Block Option

Footings Notes & Details (in ground)

IN GROUND FOOTING DIAGRAMS-BLOCK OPTION

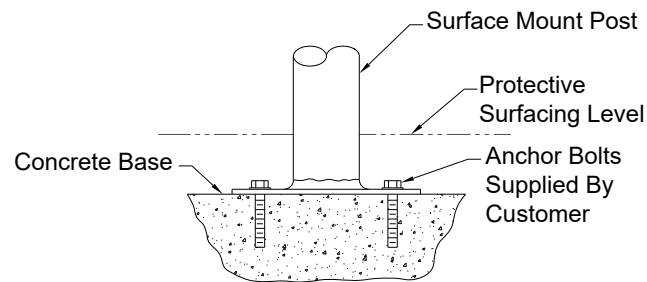


GroundZero® Support Post Footing Detail ASTM/CSA
Block Option

FOOTING NOTES (IN GROUND)

- Support post footing depth equals 42 in. (1067 mm) minus the depth of the protective surfacing material. The posts are designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
GroundZero® posts are footed 12 in. (305 mm) deeper than the regular support posts, and will be marked as such on the master footing diagram.
- Component footing depth equals 30 in. (762 mm) minus the depth of the protective surfacing material. The posts are designed to have 12" (305 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 18 in. (457 mm).
- Most support posts and component support legs will have either a factory-applied sticker with a line, or factory-applied mark designating the level of protective surfacing on a clear and level installation site. The footing depth measurements are based on this line/mark.
- If the play equipment is installed on uneven terrain, maintain support post mark for the protective surfacing level at the lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase the bottom of the support post in concrete. Place the post directly on packed stone or other porous material.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- The base of the footing must be below the frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.

Footings Notes & Details (surface mount)



Surface Mount Footing Detail

FOOTING NOTES (SURFACE MOUNT)

- Most support posts and component support legs will have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If the play equipment is installed on uneven terrain, maintain support post mark for the protective surfacing level at the lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- The footing size may vary due to local soil and weather conditions.
- Base of footing must be below frost line.

Surface mount hardware is not supplied. Customer is responsible for concrete base and providing surface mount hardware as specified by a registered structural engineer for each specific project application.



Assembly View

Refer to the Elevation View for the specific Critical Fall Height for the component.

Installation Instructions

Playworld Systems®

Models XX0260, XX0261 & XX0324

Belt Seat with Swing Chain

Installation Preparation


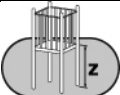

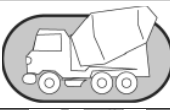
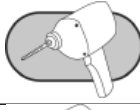

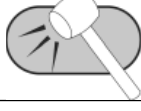
Recommended Crew: One (1) adult

Installation Time: 0.25 hour

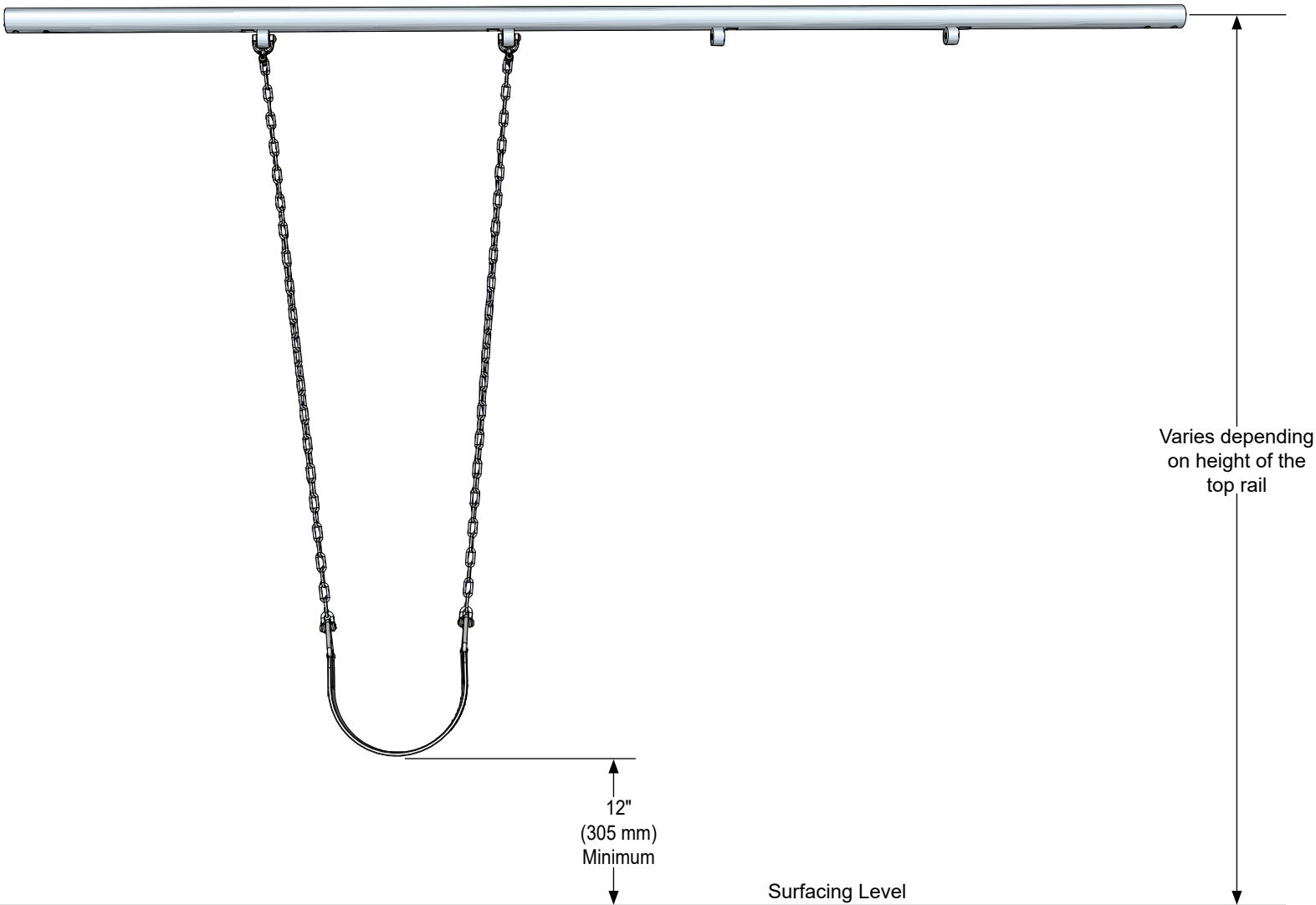
Use Zone: Refer to the swing frame instructions

User Group Age (years): ASTM: 2-12, CSA: 1.5-12, EN: 2-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

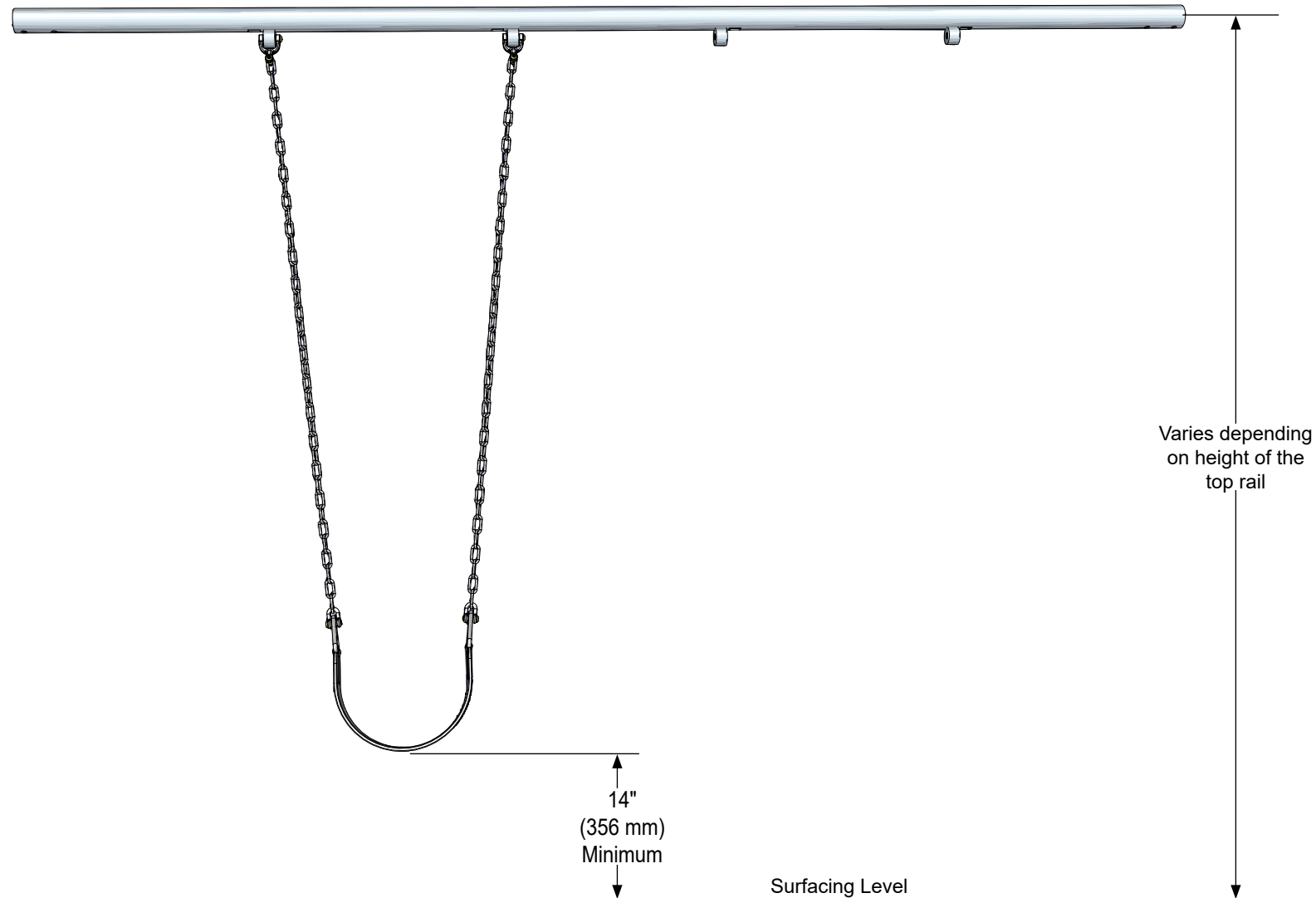


Elevation View
(ASTM/CSA)

Model Number	Critical Fall Height - ASTM/CSA	Top Rail Height
ZZXX0324	7 ft. (2134 mm)	7 ft. (2134 mm)
ZZXX0260	8 ft. (2440 mm)	8 ft. (2440 mm)
ZZXX0261	10 ft. (3050 mm)	10 ft. (3050 mm)



Installation Instructions

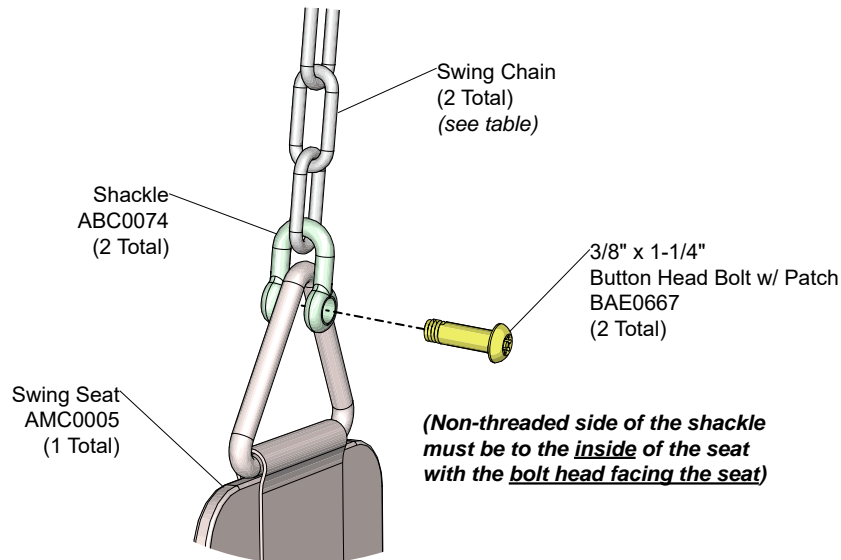


Elevation View
(EN)

Model Number	Critical Fall Height - EN	Top Rail Height
ZZXX0324	1220 mm	7 ft. (2134 mm)
ZZXX0260	1370 mm	8 ft. (2440 mm)
ZZXX0261	1675 mm	10 ft. (3050 mm)

Installation Instructions

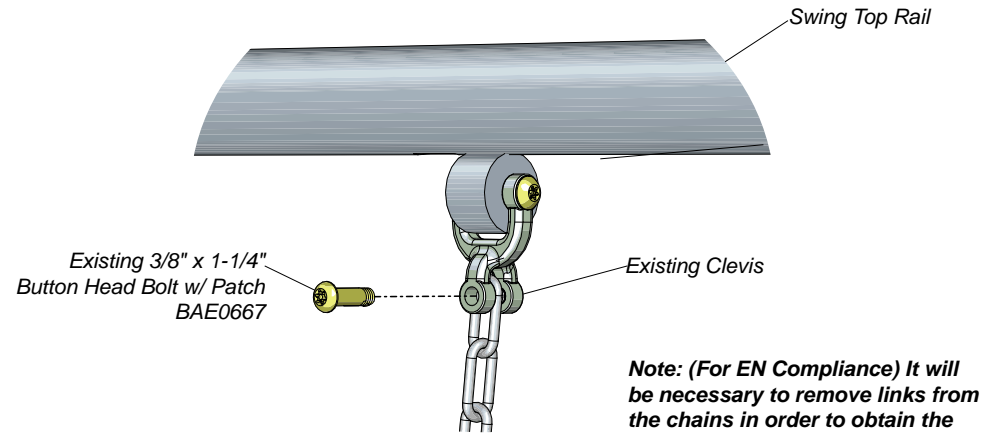
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A Step 3

Attach the swing seat to the swing chains.

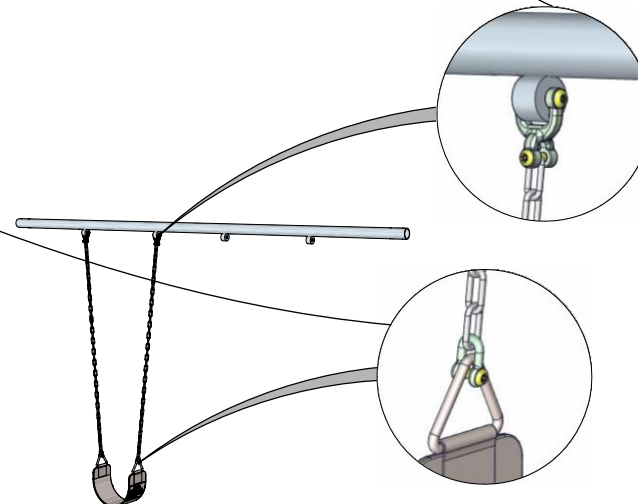
Model Number	Swing Chain Part No.	Top Rail Height
ZZXX0324	ACN0090	7 ft. (2134 mm)
ZZXX0260	ACN0091	8 ft. (2440 mm)
ZZXX0261	ACN0092	10 ft. (3050 mm)



Detail B Step 4

Attach the swing seat assembly to the existing swing hangers.

Note: (For EN Compliance) It will be necessary to remove links from the chains in order to obtain the minimum height of the seat above the protective surfacing.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the swing seat to the swing chains. See **Detail A**. Attach the seats to the chains as shown. Ensure that the non-threaded side of the shackle is to the inside of the seat. Fully tighten the connections according to tightening torque specifications.

Torque specifications - Nuts and Bolts: Snug tighten and tighten an additional one-half turn.

Step 4: Attach the swing seat assembly to the existing swing hangers. See **Detail B**. Remove the 1-1/4" bolt from the swing hanger clevis with the included wrench. Select the swing seat assembly and place last link of chain between the open end of the clevis and attach as shown. Ensure that the bolt is inserted through the non-threaded side of the clevis and threaded into the opposite side. Fully tighten the connections according to tightening torque specifications.

Note: (For EN Compliance) It will be necessary to remove links from the chains in order to obtain the minimum height of the seat above the protective surfacing.

Step 5: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the component at eye level.

ZZXX0324 - BELT SEAT WITH SWING CHAIN - 7 ft. (2134 mm) TOP RAIL HEIGHT

PART NO.	DESCRIPTION	QTY.
ABC0074	CNCTR - 5/16" CHAIN SHACKLE w/3/8"-16 THREAD	2
ACN0090	CHAIN - 53.71" 4/0	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0667	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD w/NYLON PATCH	2
BAE0922	TOOL - TT 45 L WRENCH	1
ASY0556	LABEL KIT - 2-12 YEARS BELT SWING - ASTM	1

ZZXX0260 - BELT SEAT WITH SWING CHAIN - 8 ft. (2438 mm) TOP RAIL HEIGHT

PART NO.	DESCRIPTION	QTY.
ABC0074	CONNECTOR - 5/16" CHAIN SHACKLE w/3/8"-16 THREAD	2
ACN0091	CHAIN - 65.11" 4/0	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0667	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD w/NYLON PATCH	2
BAE0922	TOOL - TT 45 L WRENCH	1
ASY0556	LABEL KIT - 2-12 YEARS BELT SWING - ASTM	1

ZZXX0261 - BELT SEAT WITH SWING CHAIN - 10 ft. (3048 mm) TOP RAIL HEIGHT

PART NO.	DESCRIPTION	QTY.
ABC0074	CONNECTOR - 5/16" CHAIN SHACKLE w/3/8"-16 THREAD	2
ACN0092	CHAIN - 89.01" 4/0	2
AMC0005	SEAT - SLASH PROOF BELT	1
BAE0667	BOLT - 3/8"-16 x 1-1/4" BUTTON HEAD w/NYLON PATCH	2
BAE0922	TOOL - TT 45 L WRENCH	1
ASY0556	LABEL KIT - 2-12 YEARS BELT SWING - ASTM	1



Swing Seat

- Inspect swing seat for sharp points, breaks, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed.

Fasteners

- Inspect for loose fasteners. Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Equipment Maintenance Playworld Systems® Models XX0324, XX0260 & XX0261 Belt Seat with Swing Chain



Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

. . . for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect chain and swing seat for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			

Inspection Codes
P = Pass **F** = Fail
NA = Not Applicable

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment **must** be installed “Step by Step” per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.

(ASTM / CSA)

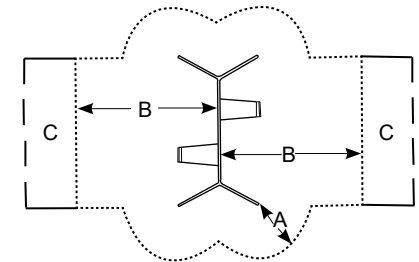
- For belt and rigid swing seats, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the height measured from the pivot point above the surfacing material measured from a point directly beneath the pivot on the supporting structure. The use zone on the sides of the swing should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.
- For enclosed infant swing seats, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the measurement from the pivot point to the swing seat surface measured from a point directly beneath the pivot on the supporting structure. The use zone on the ends of the swing (support structure) should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.

Belt/Rigid Seat Swing Zones

A = Side Use Zone
72 in. (1829 mm)

B = End Use Zone
Height of Pivot Point
from Surfacing x 2
Both Sides of Top Rail

C = No-encroachment Zone
72 in. (1829 mm)



- The use zone on either end of the swing (72 inches [1829 mm]) may be overlapped by the use zone on either end of the another swing (72 inches [1829 mm]). Swing zones on either side of the top rail may **not** be overlapped by the use zones of other play equipment.

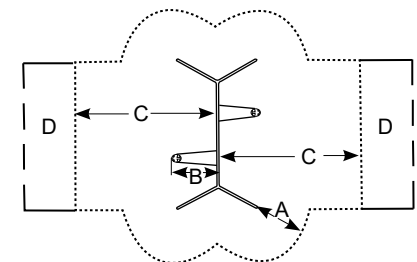
Infant Seat Swing Zones

A = Side Use Zone
72 in. (1829 mm)

B = Distance from Pivot Point
to Swing Seat Surface

C = End Use Zone: B x 2
Both Sides of Top Rail

D = No-encroachment Zone
72 in. (1829 mm)



Installation Instructions

(EN)

• For areas conforming to the EN-1176 Standard, the impact area shall be determined by calculating the horizontal distance where the swing seat is at an 60° arc and adding the appropriate amount of distance based upon the type of protective surfacing. This distance shall be covered by protective surfacing on both sides of the top rail. The protective surfacing shall be appropriate for the maximum fall height of the swing. There is no difference in the calculation based on the type of swing seat.

The impact area on both sides of top rail = $(0.867 \times \text{Distance from pivot point to seat}) + \text{either } 1750 \text{ mm if unitary surfacing or } 2250 \text{ mm if loose-fill surfacing is used}$. There shall be a minimum corridor of 1750 mm centered on each swing seat for the length of the impact area.

Use Zones - EN Compliance

A = Width of the corridor centered on the swing seat
1750 mm

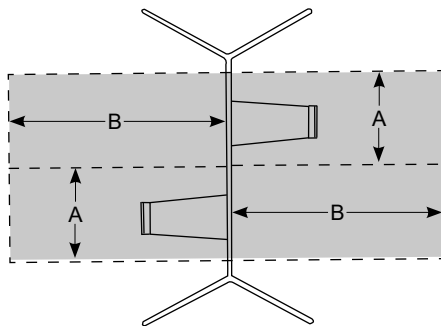
B = Length of the use zone on both sides of the top rail (2438 mm)

Infant Seats: 3290 mm for areas with unitary surfacing

or 3790 mm for areas covered with loose fill surfacing.

Belt seat or Rigid Seats: 3510 mm for with unitary surfacing

or 4010 mm for areas covered with loose fill surfacing



- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.
- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.
- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.
- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.
- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**
- Insure that hard surface warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.
- **IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose fill surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbency. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**

Installation Instructions

- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

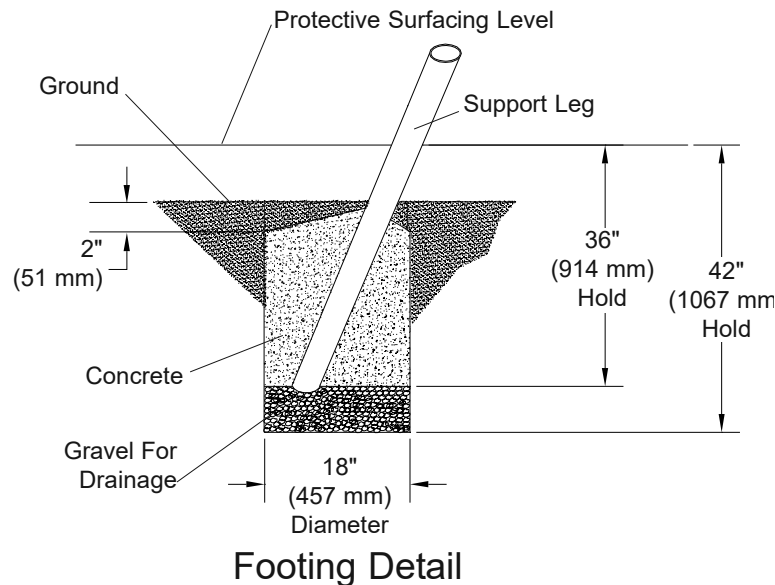
Maintenance

- Inadequate maintenance of equipment has resulted in injuries on the playground. Because the safety of playground equipment and its stability depends on good inspection and maintenance, **a comprehensive maintenance program must be developed for each playground and strictly followed.** All equipment must be inspected frequently for any potential hazards. Special attention must be given to moving parts and other components that can be expected to wear. Inspections must be carried out in a systematic manner by trained personnel. Any damaged or worn parts, or any other hazards identified during inspections must be repaired or replaced immediately. Complete documentation of all maintenance inspections and repairs must be retained.

Supervision Guidelines

- Playworld Systems strongly recommends close supervision of the children as they play as well as intensive classroom and home instruction about safe behavior on playground equipment.
- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that preschool-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.

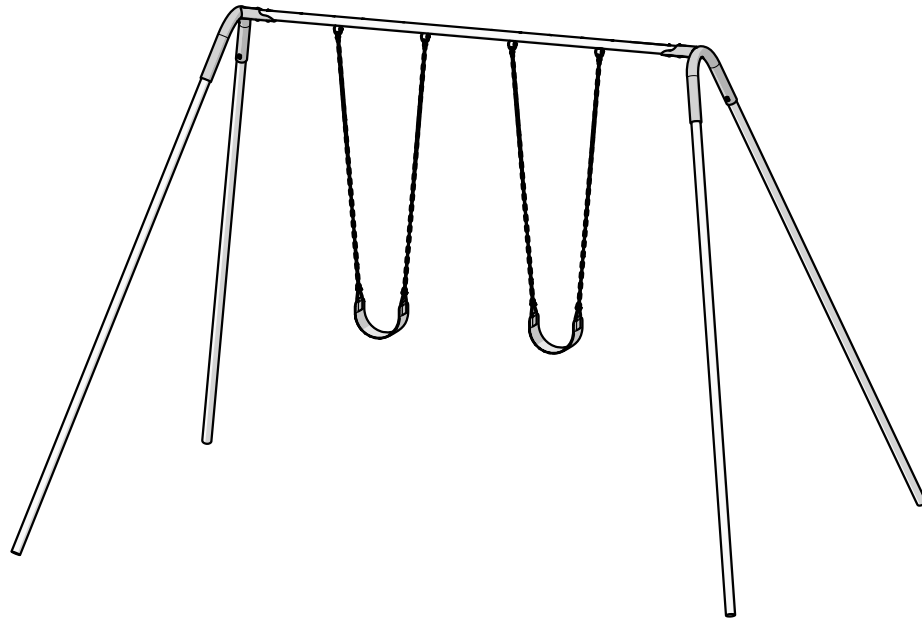
Installation Instructions



FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- All support posts and component support legs shall have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.

Note: The 2-unit swing frame can be expanded by the addition of Add-a-Bay(s). If additional bays are added, determine footing hole locations and spacing by referring to the Footing Diagram on the Add-a-Bay installation instructions.



Assembly View (representative model)

Model	Height
ZZXX0823	8" (2438 mm)
ZZXX0825	10" (3048 mm)

Installation Instructions

Playworld Systems®

Models ZZXX0823 and ZZXX0825

8 ft. (2438 mm) and 10 ft. (3048 mm)

Two Unit Standard Swing

Installation Preparation

Recommended Crew: Three (3) adults


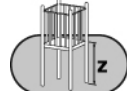

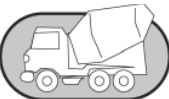
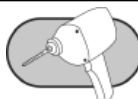

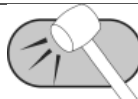
Installation Time: 3 man-hours

Concrete Required: 0.52 cubic yard (0,40 cubic meters)

Use Zone: Refer to information on pages 1 & 2

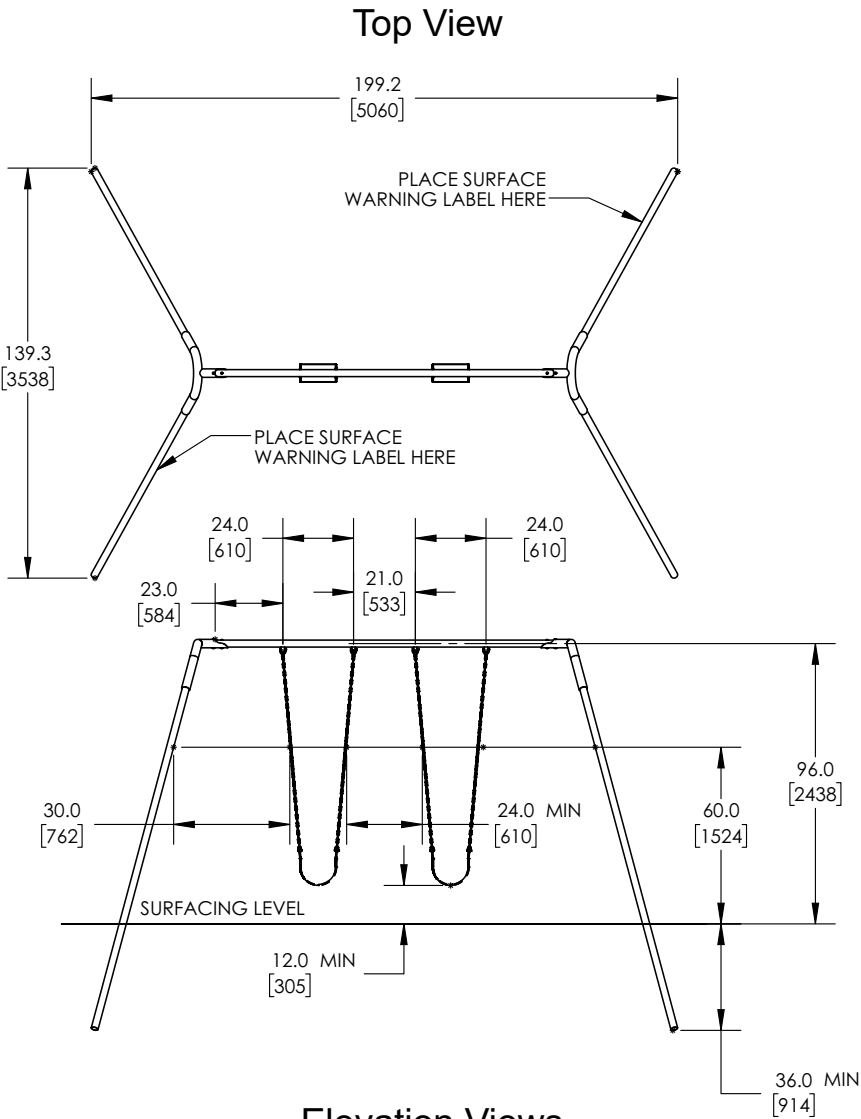
User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY

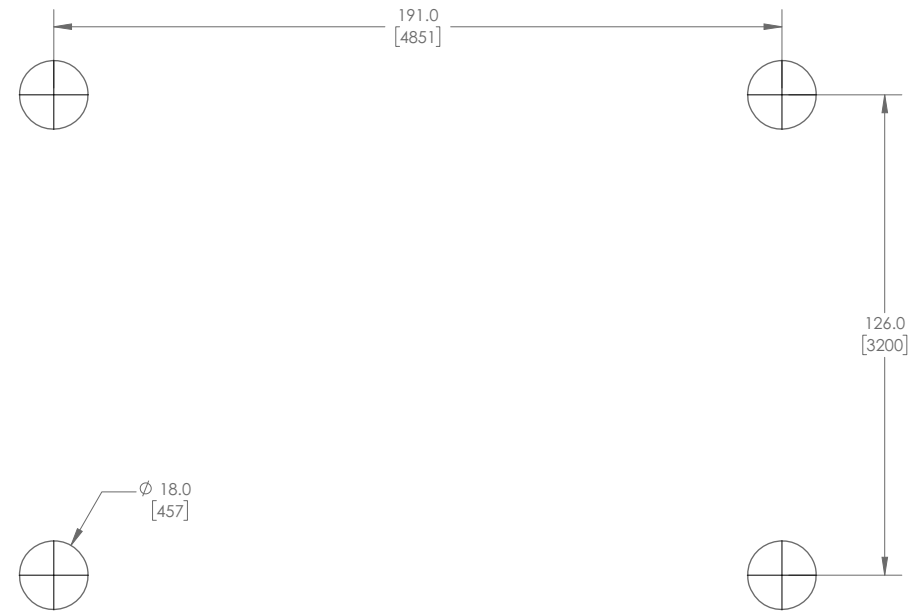
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



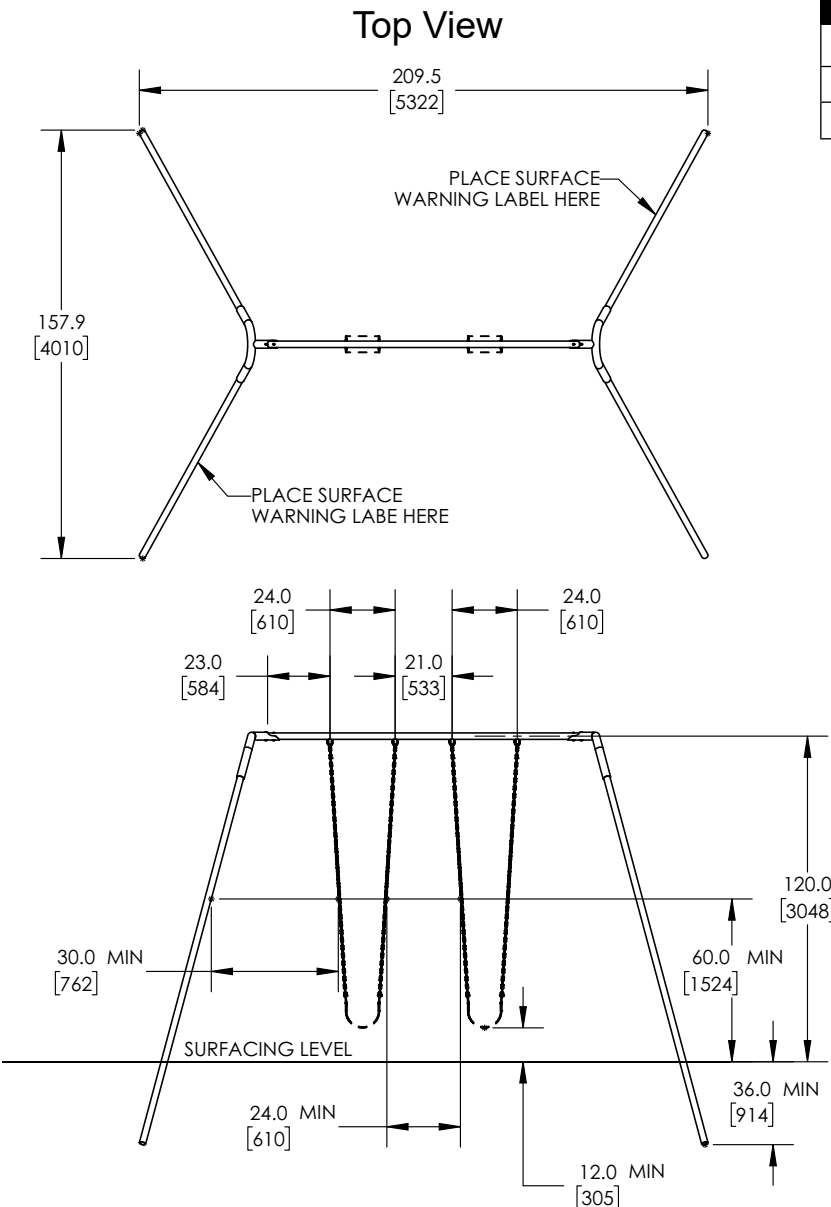
Elevation Views
ZZXX0823



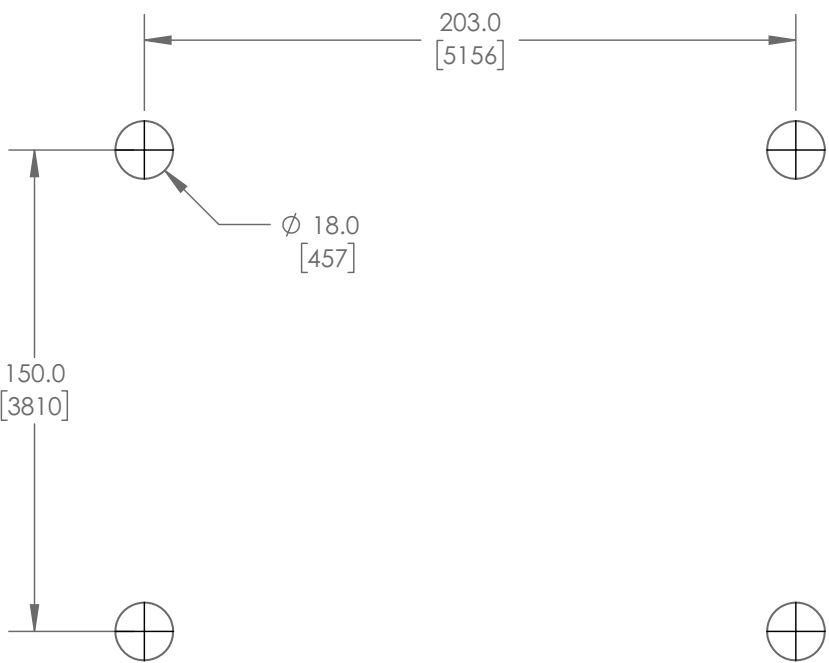
Footing Diagram



Installation Instructions



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



Footing Diagram

Elevation Views
ZZXX0825



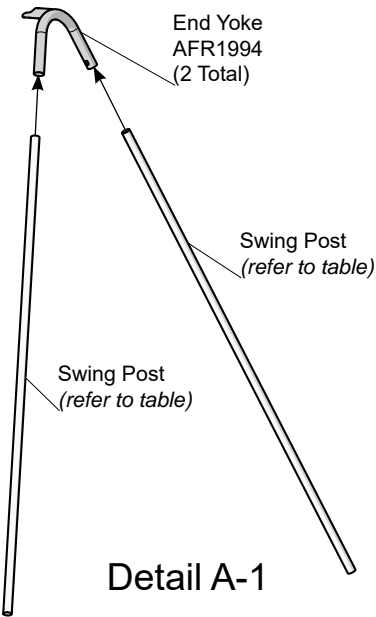
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 11.

Details A-1 and A-2

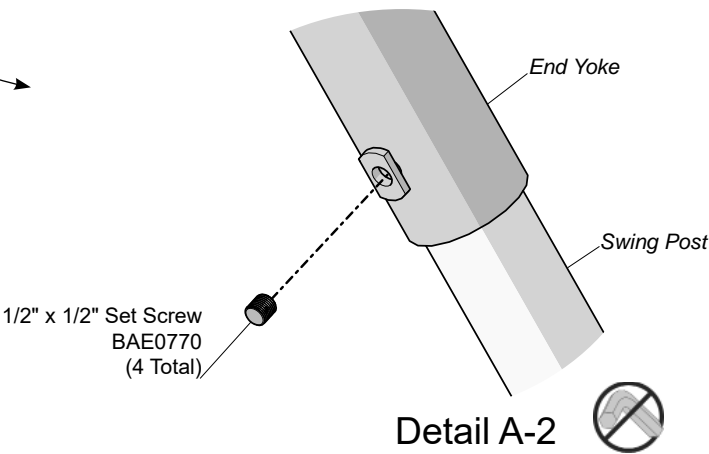
Step 4

Attach the swing posts to the end yokes.

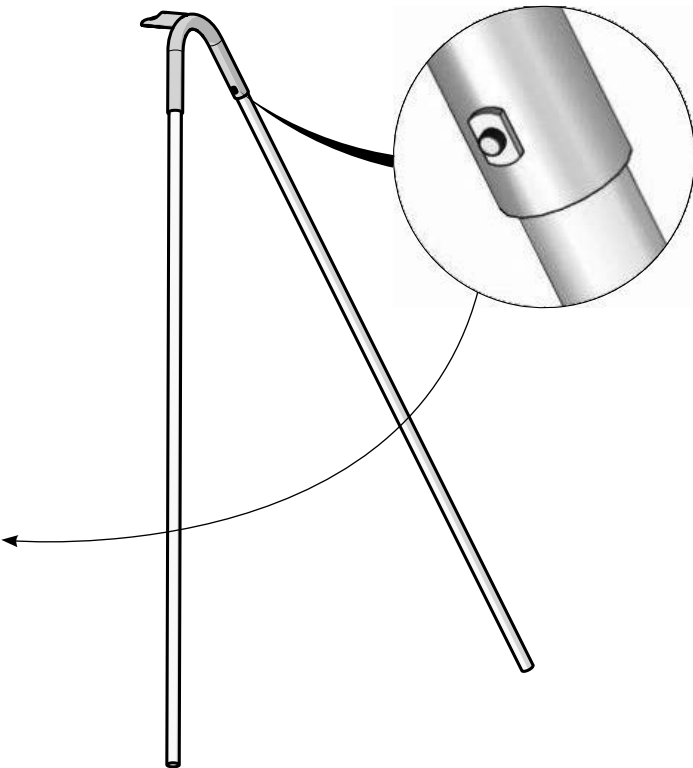


Model	Post Part Number
ZZXX0823	APT0066
ZZXX0825	AAC0555

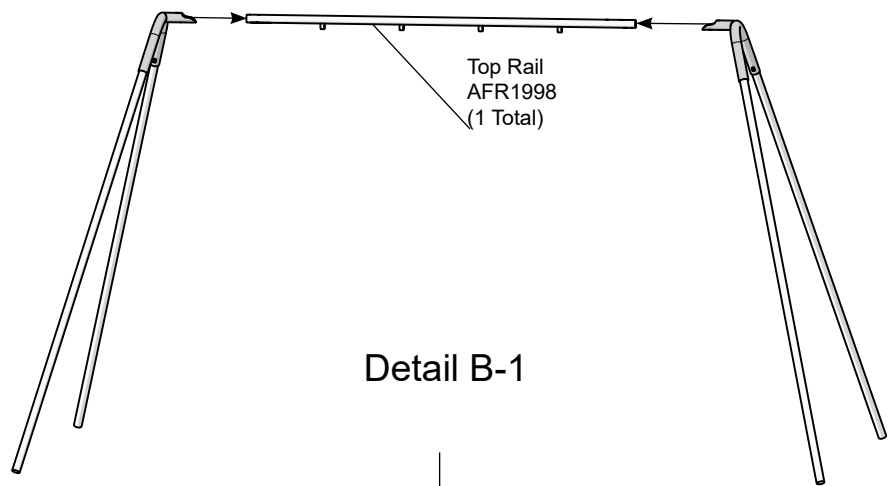
Detail A-1



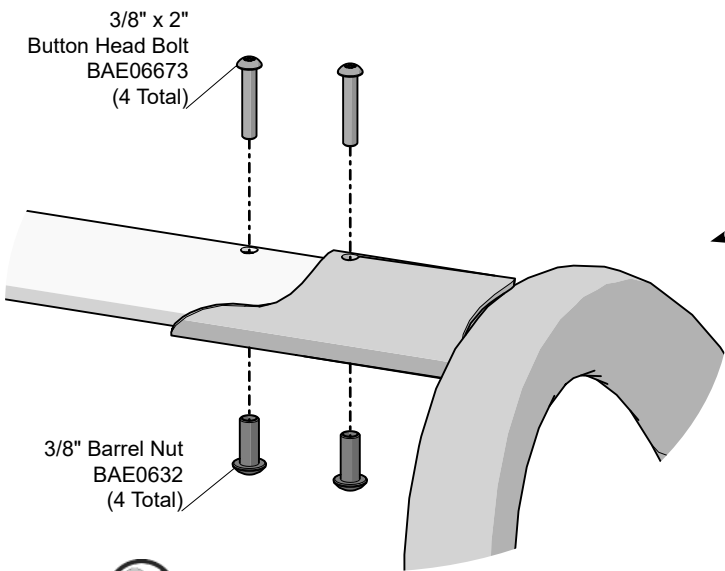
Detail A-2



Installation Instructions

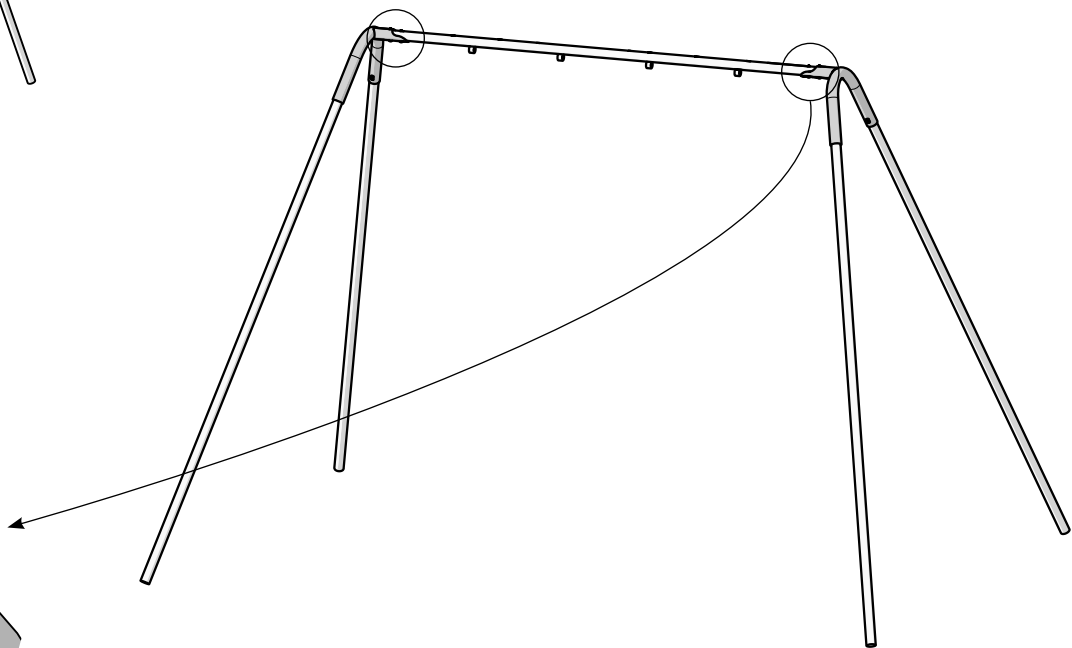


Detail B-1

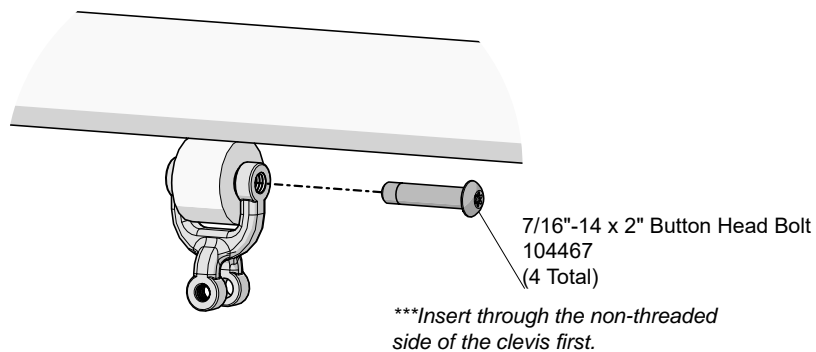
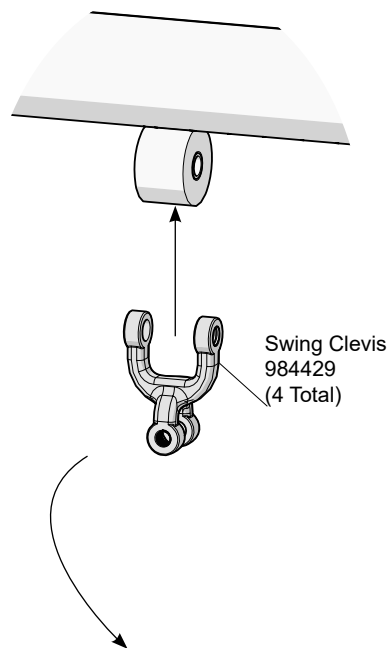


Detail B-2

Details B-1 and B-2
Step 5
Attach the top rail to the swing posts.



Installation Instructions



Detail C Step 7

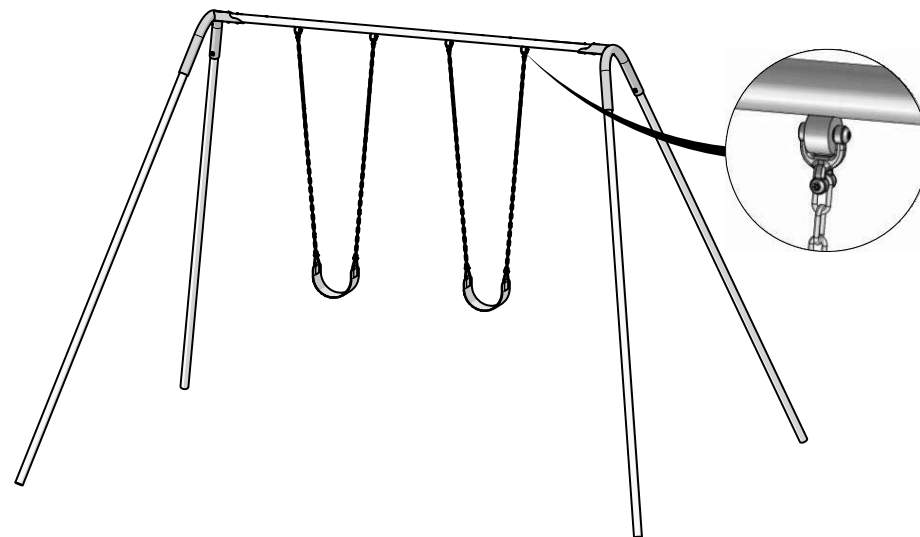
Attach the swing clevis to the top rail.

***Insert through the non-threaded
side of the clevis first.

3/8\" x 1-1/4\"
Button Head Bolt
w/ patch
BAE0667
(4 Total)

Detail D Step 8

Thread the bolt into the clevis for
attachment to a swing seat chain



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Footing Details** on page 4 of this installation document.

Step 4: Attach the swing posts to the end yokes. See **Details A-1 and A-2**. Slide the swing legs into the end yokes until they bottom out and secure with set screws.

Step 5: Attach the top rail to the swing posts. See **Details B-1 and B-2**. Place the top rail onto the end yokes and align the holes. Attach the top rail as shown.

Step 6: Place the swing frame assembly into previously excavated footings. Square and level the swing frame assembly at specified footing depth. Top rail height shall be 96 in. (2438 mm) for ZZXX0823 **or** 120 in. (3048 mm) for ZZXX0825 as measured from top of the protective surfacing material level. See **Elevation View**. Fully tighten all bolts and set screws in accordance with torque specifications. See **Step 9**. Block and brace for concrete.

Fill the footings with concrete to within 2 in. (51 mm) of ground level as shown in the **Footing Detail**. Allow concrete to harden for 72 hours before proceeding with **Step 7**. After concrete has completely hardened, fill remainder of footing with dirt. Add protective surfacing material in accordance with the second page of these instructions.

Step 7: Attach the swing clevis to the top rail. See **Detail C**. Position a swing clevis over the tab on the top rail, and align the holes. Thread the bolt through the non-threaded side of the clevis.

Step 8: Thread bolt into the swing clevis. See **Detail D**. The clevis has a threaded and non-threaded side. Insert the bolt through the non-threaded side and thread into the other side of the clevis.

Note: The bolt will need to be removed to insert the chain for the swing seat.

Final Details.

Step 9: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

Step 10: Apply the Surfacing Warning labels to upper side corners. Labels are to be plainly visible according to current playground equipment guidelines.

Step 11: For areas complying with ASTM standard F1487 or the CSA Z-614, apply the age appropriate label to the equipment at eye level.

XX0823 - 8 ft. (2438 mm) 2-UNIT STANDARD SWING

PART NO.	DESCRIPTION	QTY.
104467	BOLT - 7/16"-14 x 2.00" BUTTON HEAD PART THREADED	4
984429	CLEVIS - SWING HANGER	4
AFR1994	CONNECTOR - STANDARD END YOKE	2
AFR1998	SWING TOP RAIL - 2.375" O.D. x 4.06" x 118.00"	1
APT0066	POST - 2.38" O.D. x 144.00" SWING	4
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	4
BAE0667	BOLT - 3/8" x 1-1/4" BUTTON HEAD w/ NYLON PATCH	4
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	4
BAE0770	SCREW - 1/2"-20 X .50" SOCKET SET SS	4
BAE0910	TOOL - 1/4" SHORT HEX KEY WRENCH	1
BAE0922	TOOL - TT 45 L WRENCH	2
ALB0025	LABEL - AGE APPROPRIATE SHEET	1
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	1

Swing Seat assemblies sold separately

XX0825 - 10 ft. (3048 mm) 2-UNIT STANDARD SWING

PART NO.	DESCRIPTION	QTY.
104467	BOLT - 7/16"-14 x 2.00" BUTTON HEAD PART THREADED	4
984429	CLEVIS - SWING HANGER	4
AAC0555	POST - 2.38" O.D. x 166.00" SWING	4
AFR1994	CONNECTOR - STANDARD END YOKE	2
AFR1998	SWING TOP RAIL - 2.375" O.D. x 4.06" x 118.00"	1
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	4
BAE0667	BOLT - 3/8" x 1-1/4" BUTTON HEAD w/NYLON PATCH	4
BAE0770	SCREW - 1/2"-20 x .50" SOCKET SET SS	4
BAE0910	TOOL - 1/4" SHORT HEX KEY WRENCH	1
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	4
ALB0025	LABEL - AGE APPROPRIATE SHEET	1
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	1

Swing Seat assemblies sold separately



The world needs play.

For Customer Service, Call
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www.playworld.com



Fasteners

- Inspect for loose fasteners.
Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
Set Screws: Snug tighten and tighten an additional full turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Castings

- Inspect the castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Refer to the specific surfacing maintenance detail sheet for additional information.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

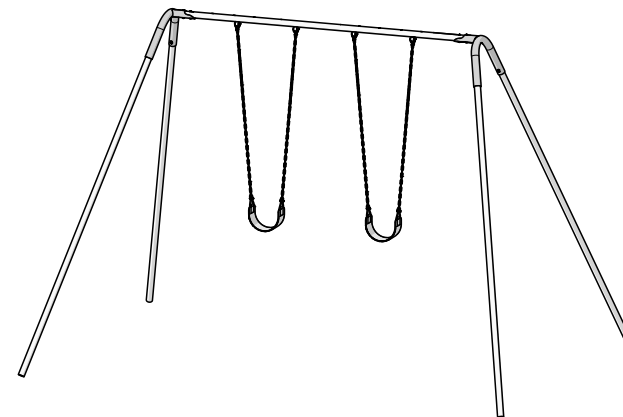
Equipment Maintenance

Playworld Systems®

Models ZZXX0823 and ZZXX0825

8 ft. (2438 mm) and 10 ft. (3048 mm)

Two Unit Standard Swing



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Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance

... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect surfacing to insure proper depth and distribution.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Important ! Please Read Completely Before Beginning Installation. According to a report published by the U. S. Consumer Product Safety Commission (C.P.S.C.) 72% of all playground injuries result from accidental falls. With this in mind, this equipment is designed to fill the need for safe yet challenging play. In conjunction with design efforts to reduce the possibilities of injuries, this equipment **must** be installed “Step by Step” per our installation instructions. As a new owner you are responsible for the correct installation, safe use, and maintenance of your equipment.

Installation Guidelines

- Identify all parts and thoroughly read the assembly instructions before beginning construction.
- Refer to your playground equipment plan and footing diagram to assure the equipment purchased will fit into your selected site area. The use and no-encroachment zones around the play equipment shall be obstacle-free areas designated for unrestricted circulation.

(ASTM / CSA)

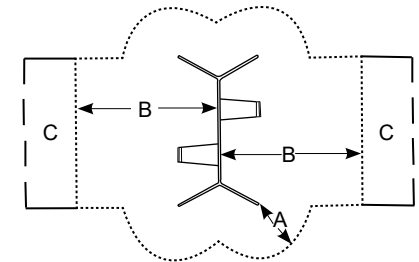
- For belt and rigid swing seats, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the height measured from the pivot point above the surfacing material measured from a point directly beneath the pivot on the supporting structure. The use zone on the sides of the swing should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.
- For enclosed infant swing seats, the use zone for swing equipment should extend to the front and rear of a single axis swing a minimum distance of twice the measurement from the pivot point to the swing seat surface measured from a point directly beneath the pivot on the supporting structure. The use zone on the ends of the swing (support structure) should extend a minimum of 72 inches (1829 mm). A no-encroachment zone is also required for installations in areas overseen by the Canadian Standards Association (C.S.A.). In addition to the use zone measurement on both sides of the top rail, this zone will extend an additional 72 inches (1829 mm) and may **not** be overlapped by the use or no-encroachment zones of adjacent play equipment. See diagram.

Belt/Rigid Seat Swing Zones

A = Side Use Zone
72 in. (1829 mm)

B = End Use Zone
Height of Pivot Point
from Surfacing x 2
Both Sides of Top Rail

C = No-encroachment Zone
72 in. (1829 mm)



- The use zone on either end of the swing (72 inches [1829 mm]) may be overlapped by the use zone on either end of the another swing (72 inches [1829 mm]). Swing zones on either side of the top rail may **not** be overlapped by the use zones of other play equipment.

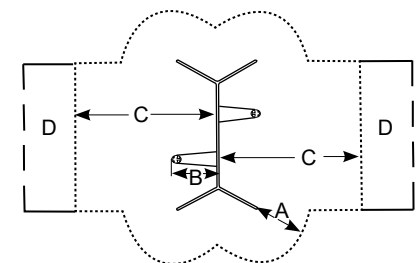
Infant Seat Swing Zones

A = Side Use Zone
72 in. (1829 mm)

B = Distance from Pivot Point
to Swing Seat Surface

C = End Use Zone: B x 2
Both Sides of Top Rail

D = No-encroachment Zone
72 in. (1829 mm)



Installation Instructions

(EN)

For areas conforming to the EN-1176 Standard, the impact area shall be determined by calculating the horizontal distance where the swing seat is at an 60° arc and adding the appropriate amount of distance based upon the type of protective surfacing. This distance shall be covered by protective surfacing on both sides of the top rail. The protective surfacing shall be appropriate for the maximum fall height of the swing. There is no difference in the calculation based on the type of swing seat.

The impact area on both sides of top rail = $(0.867 \times \text{Distance from pivot point to seat}) + \text{either } 1750 \text{ mm if unitary surfacing or } 2250 \text{ mm if loose-f ll surfacing}$ is used. There shall be a minimum corridor of 1750 mm centered on each swing seat for the length of the impact area.

Use Zones - EN Compliance

A = Width of the corridor centered on the swing seat
1750 mm

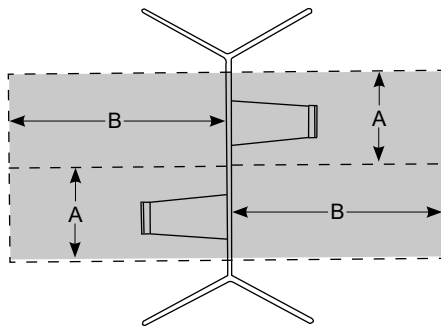
B = Length of the use zone on both sides of the top rail (2438 mm)

Infant Seats: 3290 mm for areas with unitary surfacing

or 3790 mm for areas covered with loose f ll surfacing.

Belt seat or Rigid Seats: 3510 mm for with unitary surfacing

or 4010 mm for areas covered with loose f ll surfacing



- Site layout is a critical part of the overall installation. Footings must be measured and marked accurately according to the footing diagram. A level and clear installation site is ideal.

- Good drainage around the structure and its supports is important. Inquire with local contractors for appropriate recommendations.

- After laying out all footings and before digging holes, be sure to inquire about underground utilities that may exist.

- Do not leave the job site unattended without making sure that all fastening hardware on all components are tightened according to tightening torque specifications listed on every installation guide. We also recommend roping off construction area and covering all holes that do not contain a piece of equipment with plywood or other suitable material.

- Excavate holes as shown in the footing detail. If a level and clear site cannot be obtained, adjust the depth of footing to maintain a level footing base. If soil conditions are loose or unstable, a larger diameter footing may be required. Inquire with local contractors for appropriate recommendations. Be sure concrete that might have splashed onto the unit is washed off before it dries. Allow concrete to harden 72 hours before allowing your structure to be used. **Assemble the entire structure before pouring concrete unless specifically instructed to do so in the installation instructions.**

- Insure that hard surface warning/Playworld Systems identification labels are properly affixed to the play equipment. Labels are to be plainly visible according to current playground equipment guidelines.

- IMPORTANT!** Because accidental falls around your playground equipment can occur, Playworld Systems recommends that the area under and around the structure be covered with a resilient material such as sand, bark mulch, or wood chips. If loose f ll surfacing materials are used, Playworld Systems recommends a depth of 12 in. (305 mm). An approved rubber safety matting can also be used. **Many protective surfacing materials can become compacted due to weather and use, which reduces their shock absorbency. It is strongly recommended that the surfacing be checked weekly and material added or replaced as necessary. Hard surfaces, such as asphalt, concrete and packed earth are not acceptable for use under playground equipment.**

Installation Instructions

- The entire area, under and around the playground equipment, must be covered with protective surfacing material. The impact attenuation of the protective surfacing under and around playground equipment should be rated to have a critical height value of at least the height of the highest accessible part of the equipment. The critical height for surfacing is to be rated in accordance with A.S.T.M. standard, designated F1292, A Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. Contact the manufacturer of unitary surfacing materials (rubber matting) for the critical height rating for their products.

Tools Required: Playworld Systems supplies a service kit that contains commonly used hex key wrenches required to assemble your equipment. You may also need: shovel, digging iron, post hole digger, steel rake, wheelbarrow, garden hoe, water hose, tape measure, level, alignment tool, 3/8" ratchet with 9/16" socket, and 9/16" combination wrench.

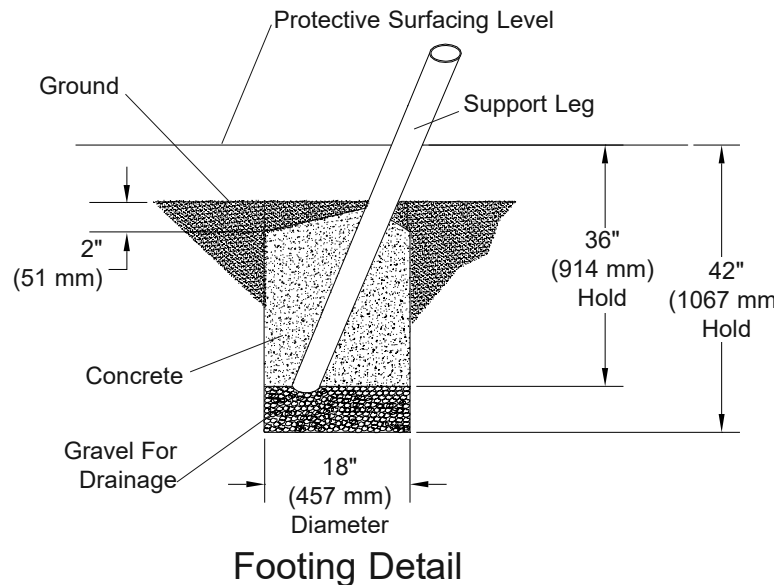
Maintenance

- Inadequate maintenance of equipment has resulted in injuries on the playground. Because the safety of playground equipment and its stability depends on good inspection and maintenance, **a comprehensive maintenance program must be developed for each playground and strictly followed.** All equipment must be inspected frequently for any potential hazards. Special attention must be given to moving parts and other components that can be expected to wear. Inspections must be carried out in a systematic manner by trained personnel. Any damaged or worn parts, or any other hazards identified during inspections must be repaired or replaced immediately. Complete documentation of all maintenance inspections and repairs must be retained.

Supervision Guidelines

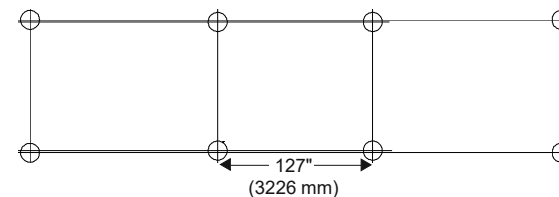
- Playworld Systems strongly recommends close supervision of the children as they play as well as intensive classroom and home instruction about safe behavior on playground equipment.
- Playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Signs should be posted near the equipment indicating the recommended age of the users. Supervisors should direct children to equipment appropriate for their age.
- It is important that playground supervisors recognize that preschool-age children require more attentive supervision on playgrounds than older children.
- Do not permit the use of wet playground equipment. Wet equipment will inhibit necessary traction and gripping capabilities. Slips or falls could occur.
- Do not permit too many children on the same piece of equipment at the same time. It is suggested that children take turns.
- Constantly observe play patterns to discover possible hazardous play and suggest changes in equipment use or play patterns.

Installation Instructions

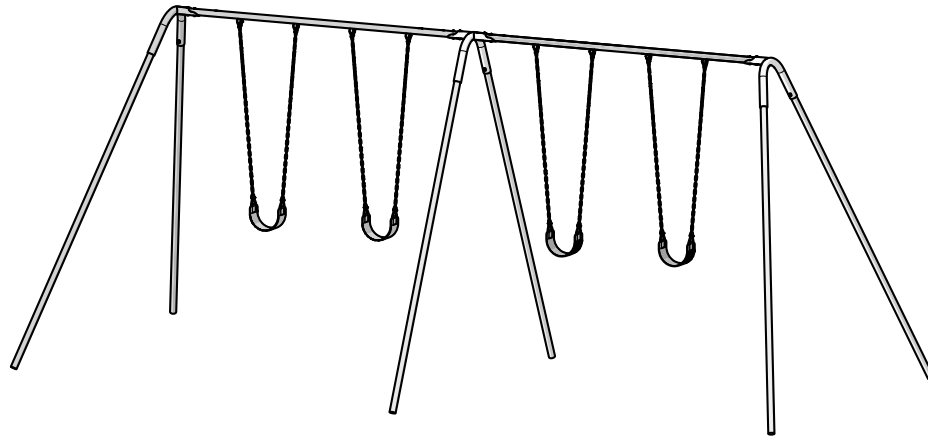


FOOTING NOTES

- Support post footing depth equals 42 in. (1067 mm) less the depth of the protective surfacing material. The post is designed to have 24" (610 mm) in concrete.
Example: If 12 in. (305 mm) of wood mulch is used for surfacing, the footing depth would be 30 in. (762 mm).
- All support posts and component support legs shall have either a factory-applied sticker with line, or factory-applied mark designating protective surfacing level on a clear and level installation site.
- If play structure is installed on uneven terrain, maintain support post mark at protective surfacing level at lowest grade. Adjust other footings accordingly. Support posts and all attaching decks and play components must be plumb and level.
- Do not encase bottom of support post in concrete. Place post directly on packed stone.
- The footings shown on Playworld Systems' documentation are recommendations based on historical performance in average soil conditions. Footing dimensions may be modified by the owner based on actual soil conditions.
For example:
 - If local soil is loose or unstable, a larger footing may be required.
 - If local soil is considered stable, such as bedrock, clay or hard packed earth, a smaller footing may be used. Before changing footing dimensions, we strongly recommend that the footings be reviewed and approved by a registered engineer.
- Base of footing must be below frost line.
- Assemble the entire structure before pouring concrete unless specifically instructed to do so in the individual component installation instructions.



Note: When adding extra Add-a-Bays to maintain 127" (3226 mm) between the footers for the straight center posts (see diagram above).



Assembly View (*representative model*)

Model	Height
ZZXX0824	8" (2438 mm)
ZZXX0827	10" (3048 mm)

Installation Instructions

Playworld Systems®

Models ZZXX0824 and ZZXX0827


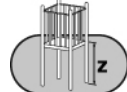

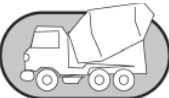


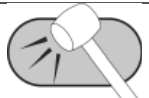
8 ft. (2438 mm) and 10 ft. (3048 mm)

Standard Duty Swing Add-a-Bay

Installation Preparation

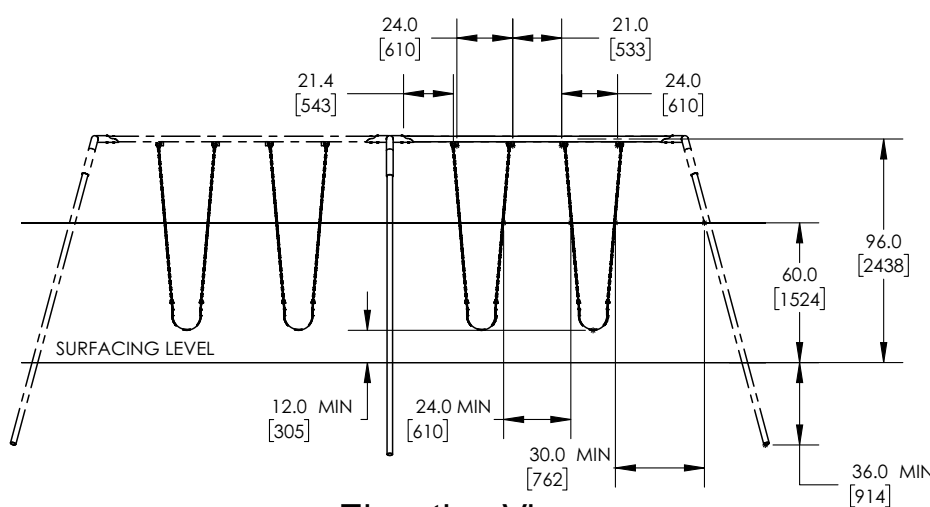
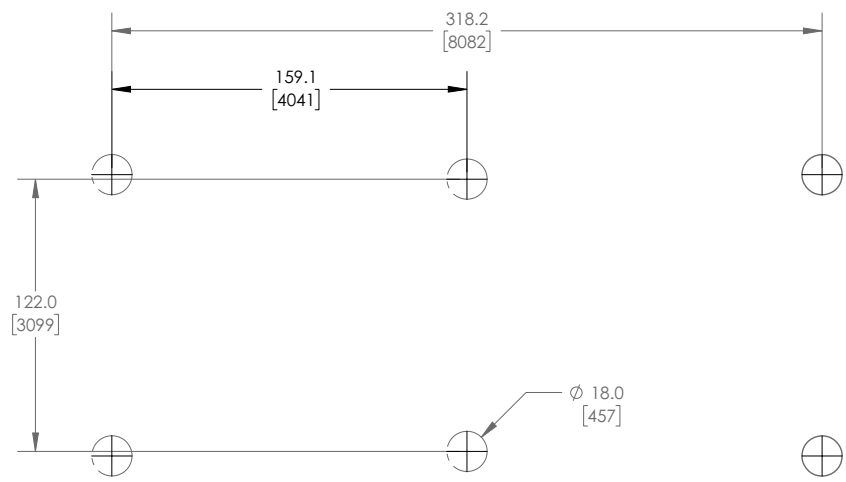
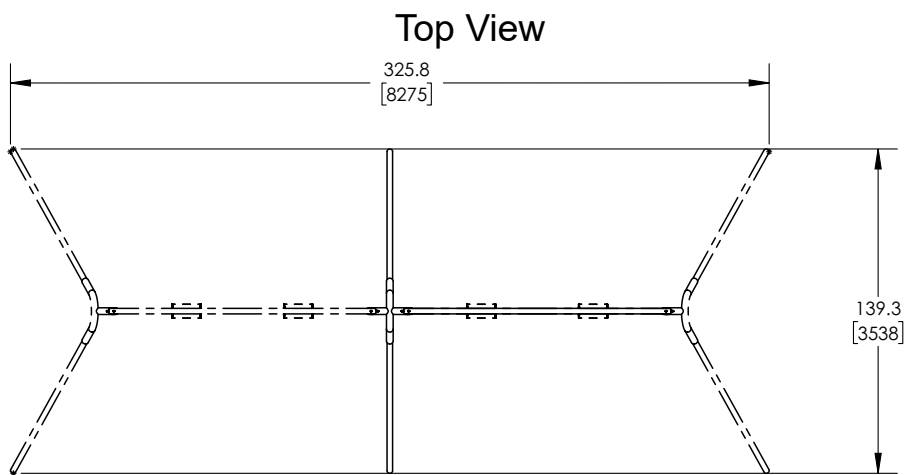
Recommended Crew: Three (3) adults
 Installation Time: 1.5 man-hours
 Concrete Required: 0.26 cubic yard (0,20 cubic meters)
 Use Zone: Refer to information on pages 1 & 2
 User Group Age (years): ASTM/CSA: 2-12, EN: 2-14

ICON KEY

	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]



ZZXX0824

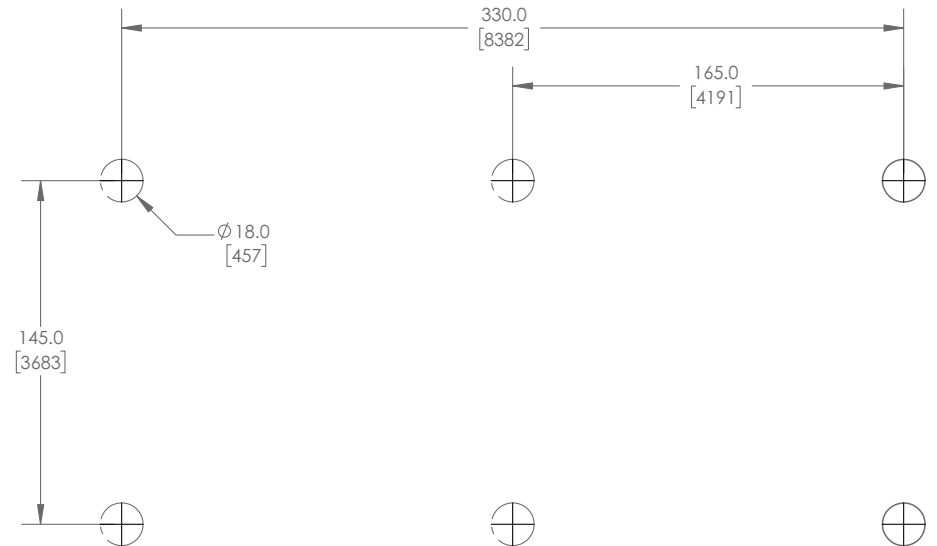
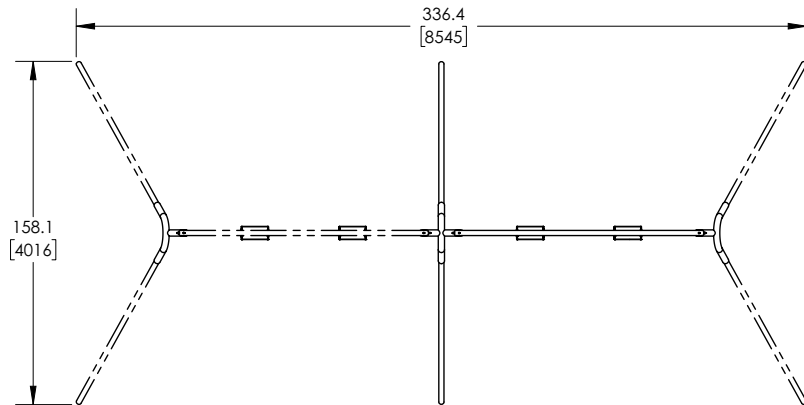


Installation Instructions

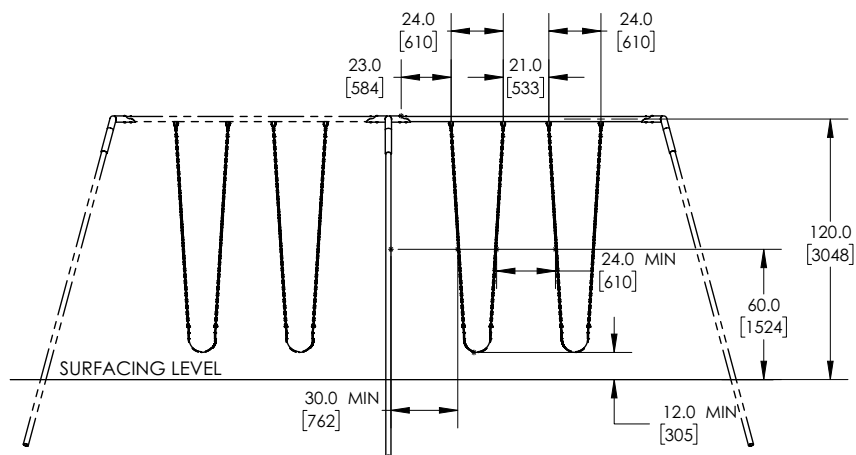
KEY

Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

Top View



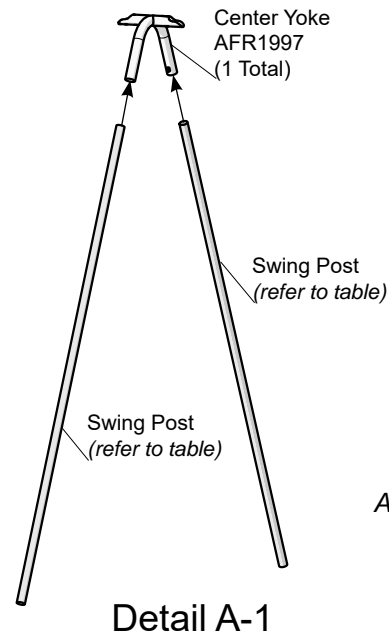
Footing Diagram



Elevation Views
ZZXX0827

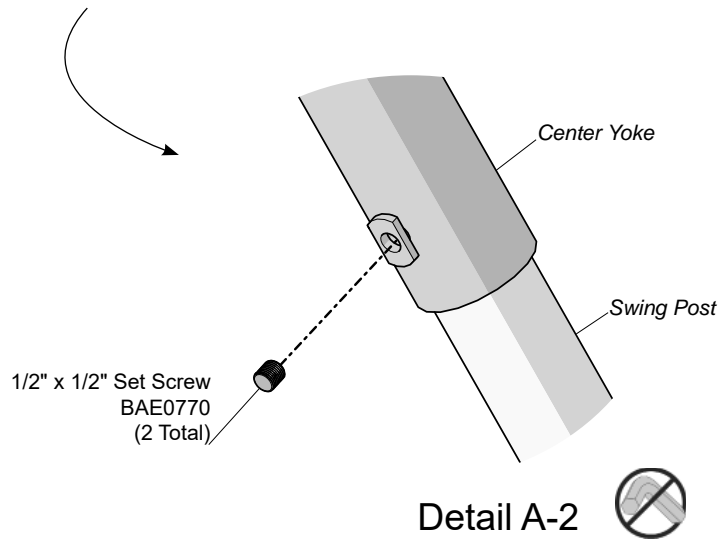
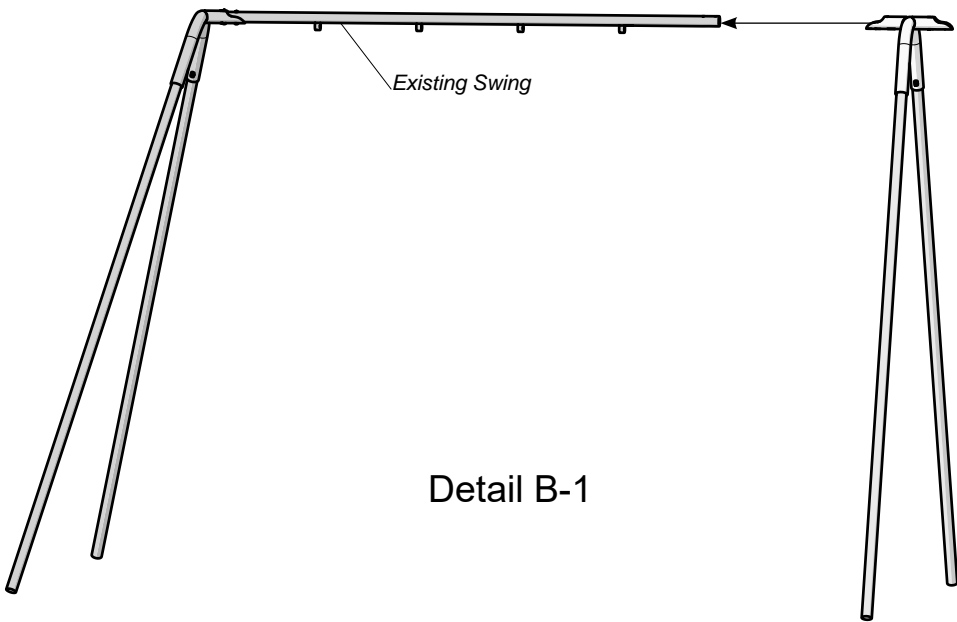
Installation Instructions

Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 12.

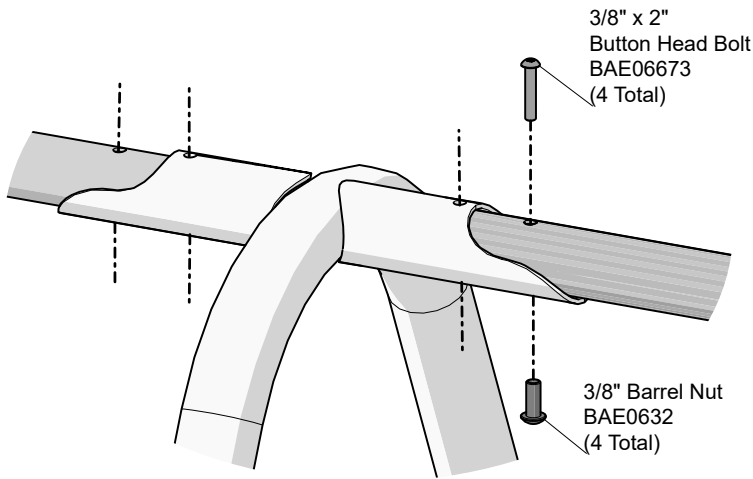
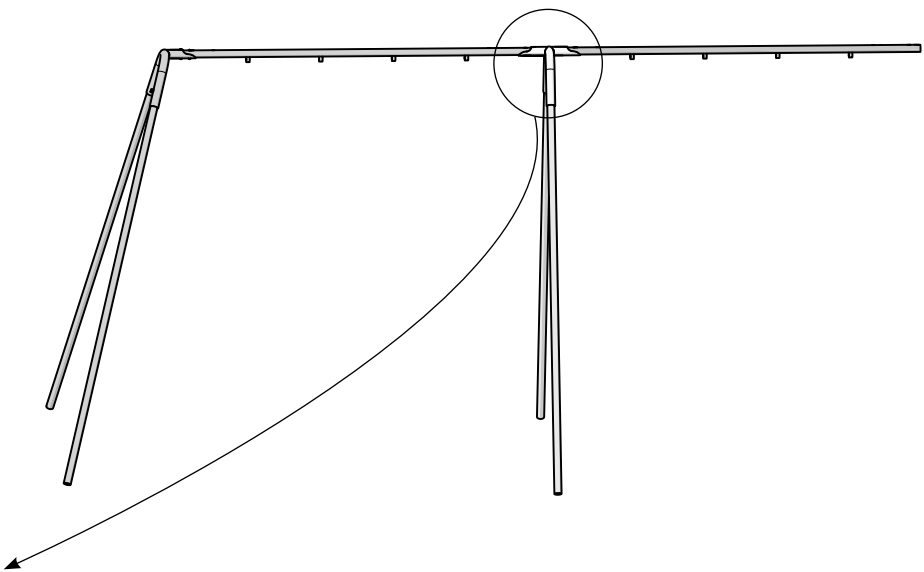
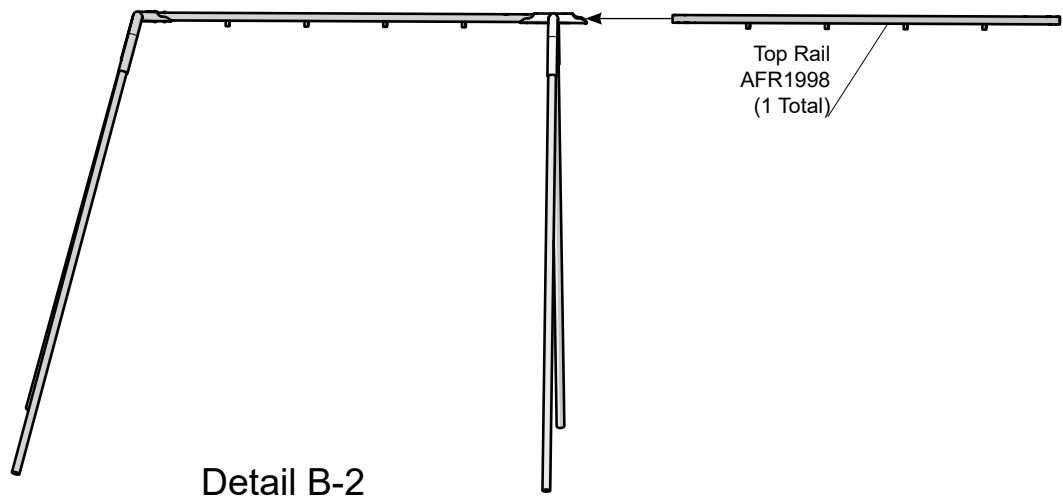


Model	Post Part Number
ZZXX0823	APT0066
ZZXX0825	AAC0555

Details A-1 and A-2
Step 5
Attach the swing posts to the center yoke.

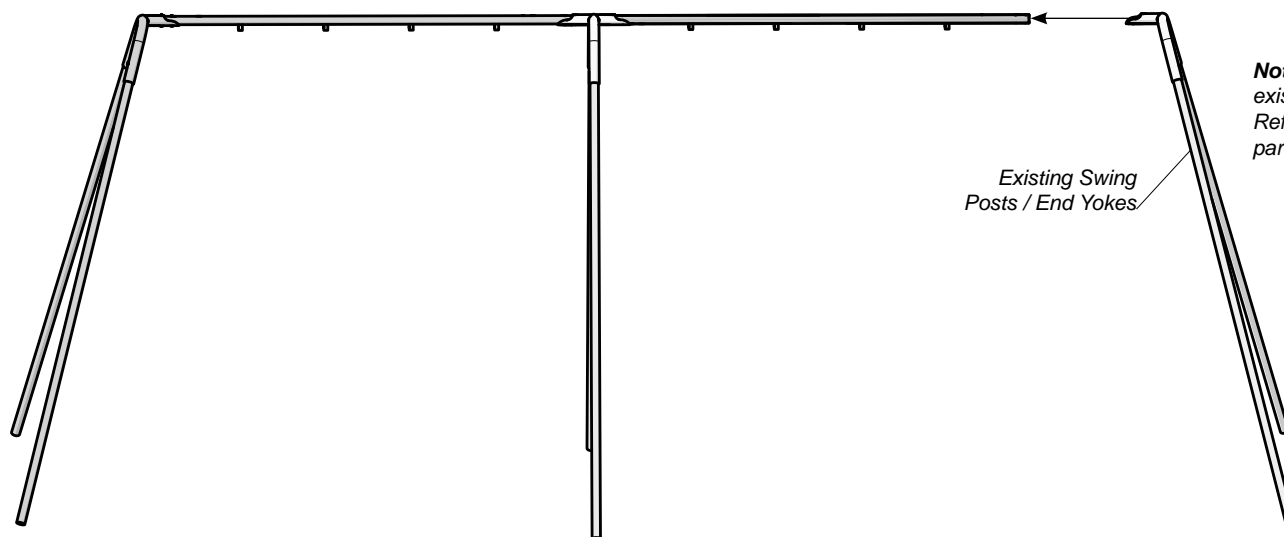


Installation Instructions



Details B-1, B-2 and B-3
Step 6
Attach the top rails to the center yoke.

Installation Instructions

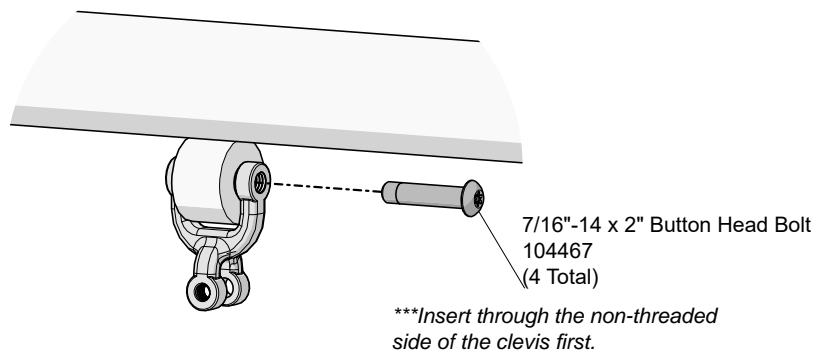
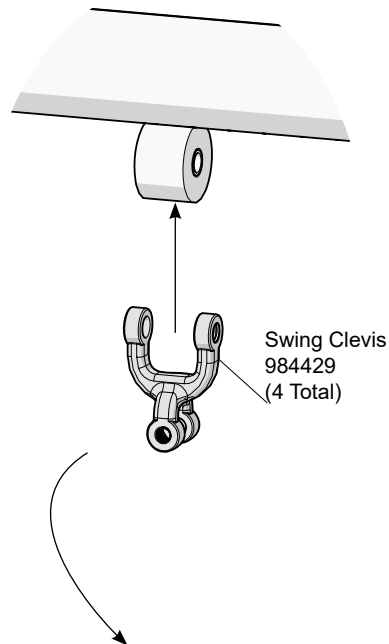


Note: Use the hardware from the existing swing for attachment. Refer to Detail B-3 for hardware part numbers.

Detail C Step 7

Re-attach the existing swing posts / end yoke.

Installation Instructions

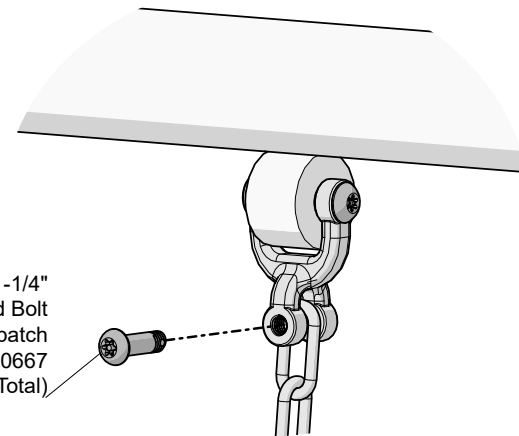


Detail D Step 9

Attach the swing clevis to the top rail.

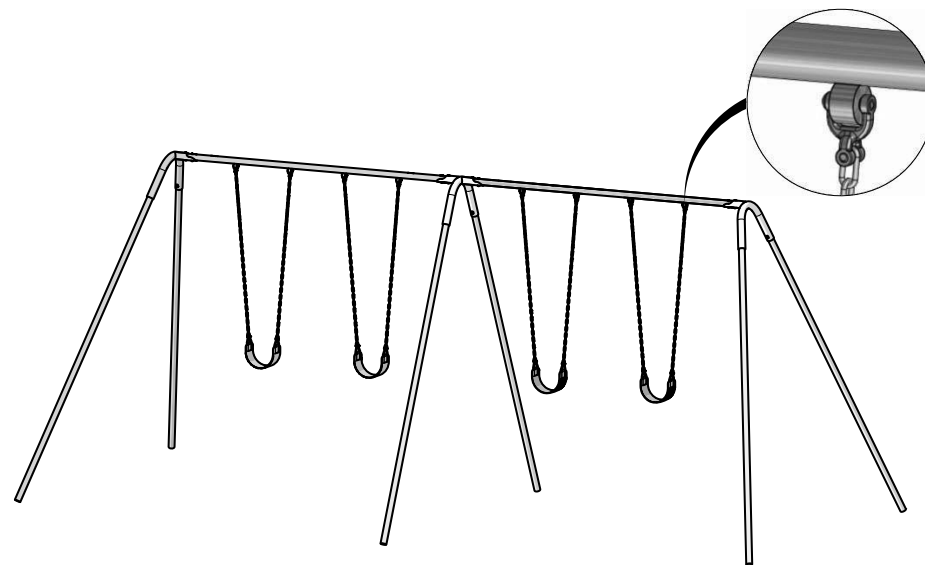
***Insert through the non-threaded
side of the clevis first.

3/8" x 1-1/4"
Button Head Bolt
w/ patch
BAE0667
(4 Total)



Detail E Step 10

Thread the bolt into the clevis for
attachment to a swing seat chain



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Excavate footings as shown in the **Footing Details** on page 4 of this installation document.

Step 4: Remove, and reserve for reattachment, the hardware holding the end yoke to the top rail on the end to be moved. Dig out the legs and concrete and place them in the newly excavated holes.

Step 5: Attach the swing posts to the center yoke. See **Details A-1 and A-2**. Slide the swing legs into the center yoke until they bottom out and secure with set screws.

Step 6: Attach the top rails to the center yoke. See **Details B-1, B-2 and B-3**. Slide the center yoke assembly over the existing top rail. Slide the other swing top rail into the open end of the center yoke, and attach as shown.

Step 7: Re-attach the existing swing posts / end yoke. See **Detail C**. Using the hardware removed in Step 4, re-attach the swing posts / end yoke.

Step 8: Square and level the swing frame assembly at specified footing depth. Top rail height shall be 96 in. (2438 mm) for ZZXX0824 **or** 120 in. (3048 mm) for ZZXX0827 as measured from top of the protective surfacing material level. See **Elevation View**. Fully tighten all bolts and set screws in accordance with torque specifications. See **Step 11**. Block and brace for concrete.

Fill the footings with concrete to within 2 in. (51 mm) of ground level as shown in the **Footing Detail**. Allow concrete to harden for 72 hours before proceeding with **Step 9**. After concrete has completely hardened, fill remainder of footing with dirt. Add protective surfacing material in accordance with the second page of these instructions.

Step 9: Attach the swing clevis to the top rail. See **Detail D**. Position a swing clevis over the tab on the top rail, and align the holes. Thread the bolt through the non-threaded side of the clevis.

Step 10: Thread bolt into the swing clevis. See **Detail E**. The clevis has a threaded and non-threaded side. Insert the bolt through the non-threaded side and thread into the other side of the clevis.

Note: The bolt will need to be removed to insert the chain for the swing seat.

Final Details.

Step 11: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Set Screws - Snug tighten and tighten an additional full turn.

Step 12: Apply the Surfacing Warning labels to upper side corners. Labels are to be plainly visible according to current playground equipment guidelines.

Step 13: See Swing Seat Installation Instruction sheet for swing seat attachment. Swing seats are ordered separately.

Bill of Materials

XX0824 - 8 ft. (2438 mm) STANDARD DUTY SWING ADD-A-BAY

PART NO.	DESCRIPTION	QTY.
104467	BOLT - 7/16"-14 x 2.00" BUTTON HEAD PART THREADED	4
984429	CLEVIS - SWING HANGER	4
AFR1997	CONNECTOR STANDARD CENTER YOKE	1
AFR1998	SWING TOP RAIL - 2.375" O.D. x 4.06" x 118.00"	1
APT0066	POST - 2.38" O.D. x 144.00" SWING	2
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	4
BAE0667	BOLT - 3/8" x 1-1/4" BUTTON HEAD w/NYLON PATCH	4
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	4
BAE0770	SCREW - 1/2"-20 x .50" SOCKET SET SS	2
BAE0910	TOOL - 1/4" SHORT HEX KEY WRENCH	1
BAE0922	TOOL - TT 45 L WRENCH	2
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	1

Swing Seat assemblies sold separately

XX0827 - 10 ft. (3048 mm) STANDARD DUTY SWING ADD-A-BAY

PART NO.	DESCRIPTION	QTY.
104467	BOLT - 7/16"-14 x 2.00" BUTTON HEAD PART THREADED	4
984429	CLEVIS - SWING HANGER	4
AAC0555	POST - 2.38" O.D. x 166.00"	4
AFR1997	CONNECTOR STANDARD CENTER YOKE	1
AFR1998	SWING TOP RAIL - 2.375" O.D. x 4.06" x 118.00"	1
BAE0632	NUT - 3/8"-16 x 1.25 BARREL w/PATCH	6
BAE0667	BOLT - 3/8" x 1-1/4" BUTTON HEAD w/NYLON PATCH	4
BAE0770	SCREW - 1/2"-20 x .50" SOCKET SET SS	2
BAE0910	TOOL - 1/4" SHORT HEX KEY WRENCH	1
BAE0922	TOOL - TT 45 L WRENCH	2
BAE06673	BOLT - 3/8"-16 x 2.00" BUTTON HEAD - SS	6
AFR1994	CONNECTOR - STANDARD END YOKE	1
BAB0032	LABEL - TAMPER RESISTANT SURFACE WARNING	1

Swing Seat assemblies sold separately



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Fasteners

- Inspect for loose fasteners.
Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
Set Screws: Snug tighten and tighten an additional full turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Castings

- Inspect the castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Welds

- Inspect all welded joints. If any broken welds are detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

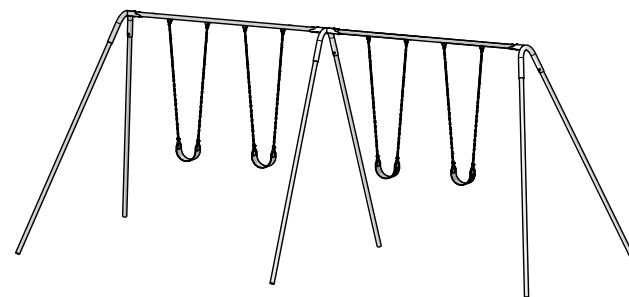
Equipment Maintenance

Playworld Systems®

Models ZZXX0824 and ZZXX0827

8 ft. (2438 mm) and 10 ft. (3048 mm)

Standard Duty Swing Add-a-Bay



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Inspection Form

- Be sure that you are using a copy of this Inspection Form and not your original.
- Use the Inspection Codes listed below and record condition of equipment at time of examination on the Inspection Checklist.
- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance ... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect surfacing to insure proper depth and distribution.	High			
Inspect footing to insure support is secure and footing is not damaged.	Low			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			

Inspection Codes	
P = Pass	F = Fail
NA = Not Applicable	

Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___



Installation Instructions

Playworld Systems®

Models XX0891, XX0892 and XX0893

Accessible Swing Seat to 7 ft. (2134 mm), 8 ft. (2438 mm) and 10 ft. (3048) Top Rail

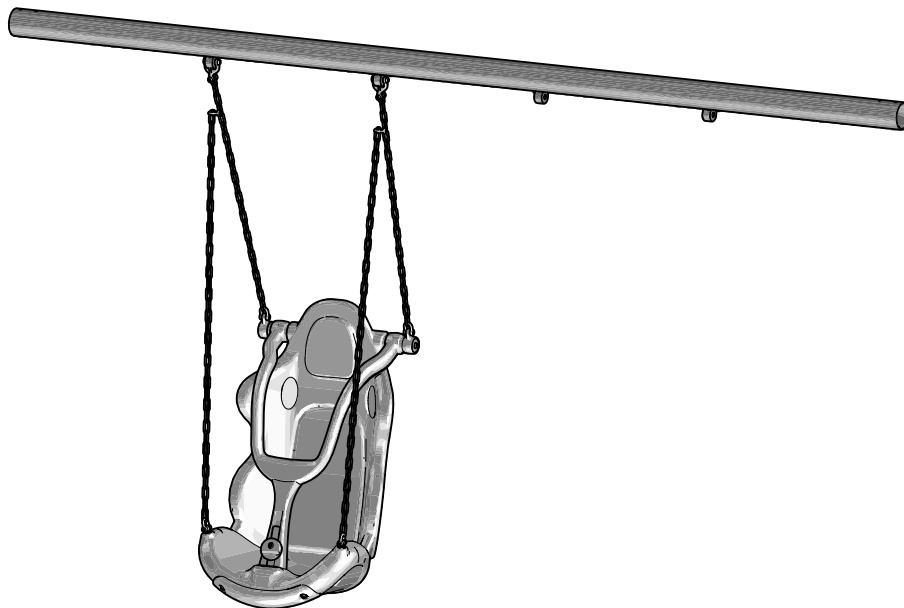
Installation Preparation

Recommended Crew: One (1) adult

Installation Time: 0.5 man-hour

Use Zone: Refer to swing seat instructions


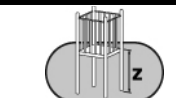





User Group Age (years): ASTM: 2-12, CSA: 1.5-12



Assembly View

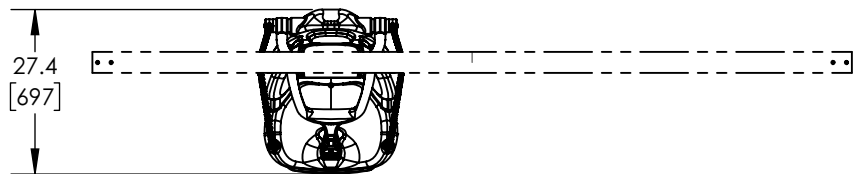
Model Number	Top Rail Height
ZZXX0891	7 ft. (2135 mm)
ZZXX0892	8 ft. (2440 mm)
ZZXX0893	10 ft. (3050 mm)

ICON KEY

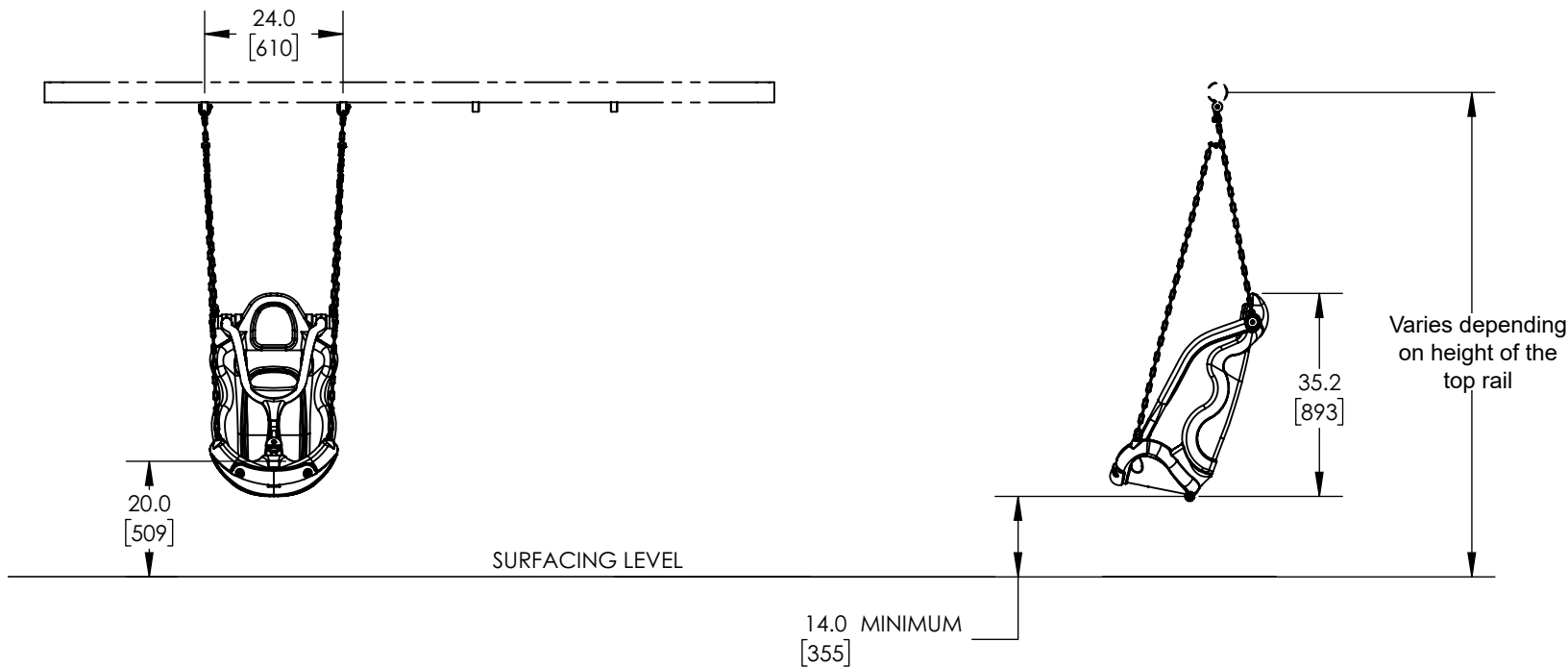
	Fully Tighten Hardware		Critical Fall Height
	Do Not Fully Tighten Hardware		Pour Concrete
	Drill		Dig Footing Holes
	Hammer		

Installation Instructions

Top View



KEY	
Position	Unit of Measurement
Top #	Inches
Bottom #	[Millimeters]

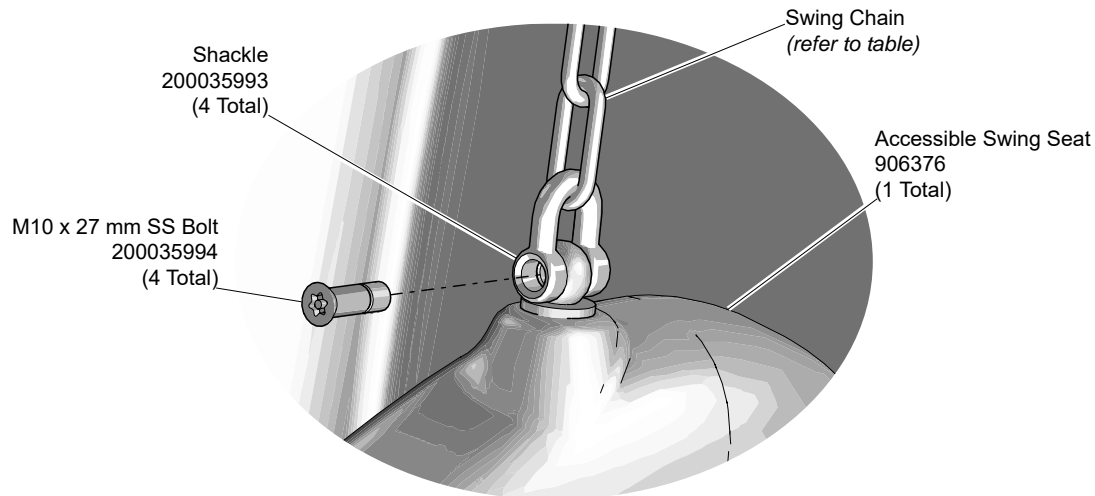


Elevation Views



Installation Instructions

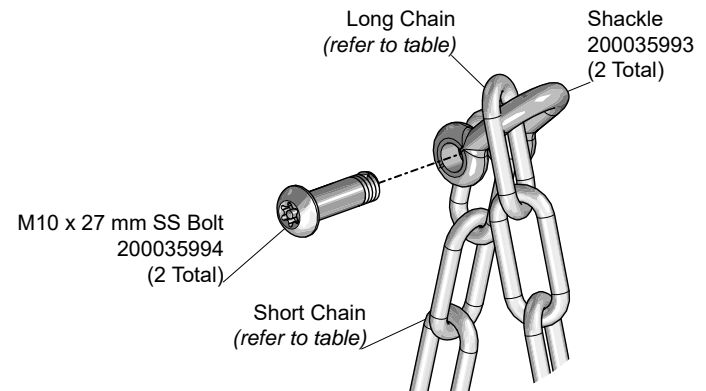
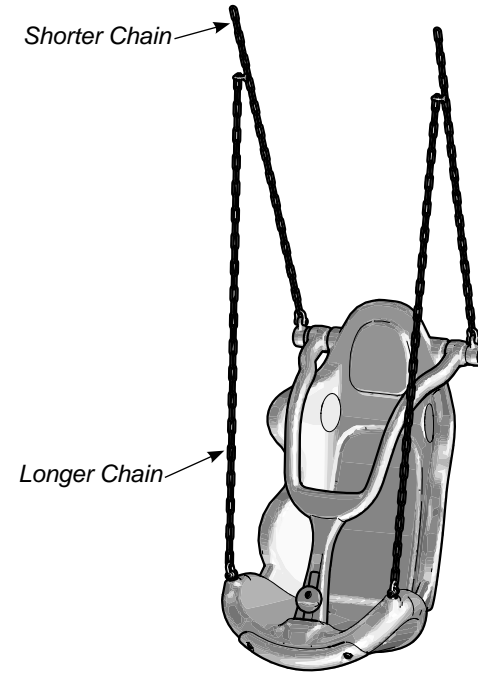
Follow the details in alphabetical order. For clarification, each detail references the step description. The step descriptions start on page 5.



Detail A
Step 3

Attach the chains to the swing seat.

Model Number	Longer Chain	Shorter Chain
ZZXX0891	ACN0050	ACN0053
ZZXX0892	ACN0226	ACN0227
ZZXX0893	ACN0224	ACN0225

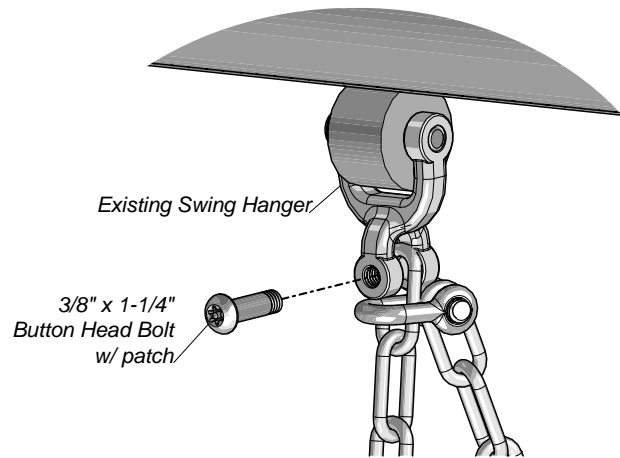


Detail C
Step 5

Connect the chains together.

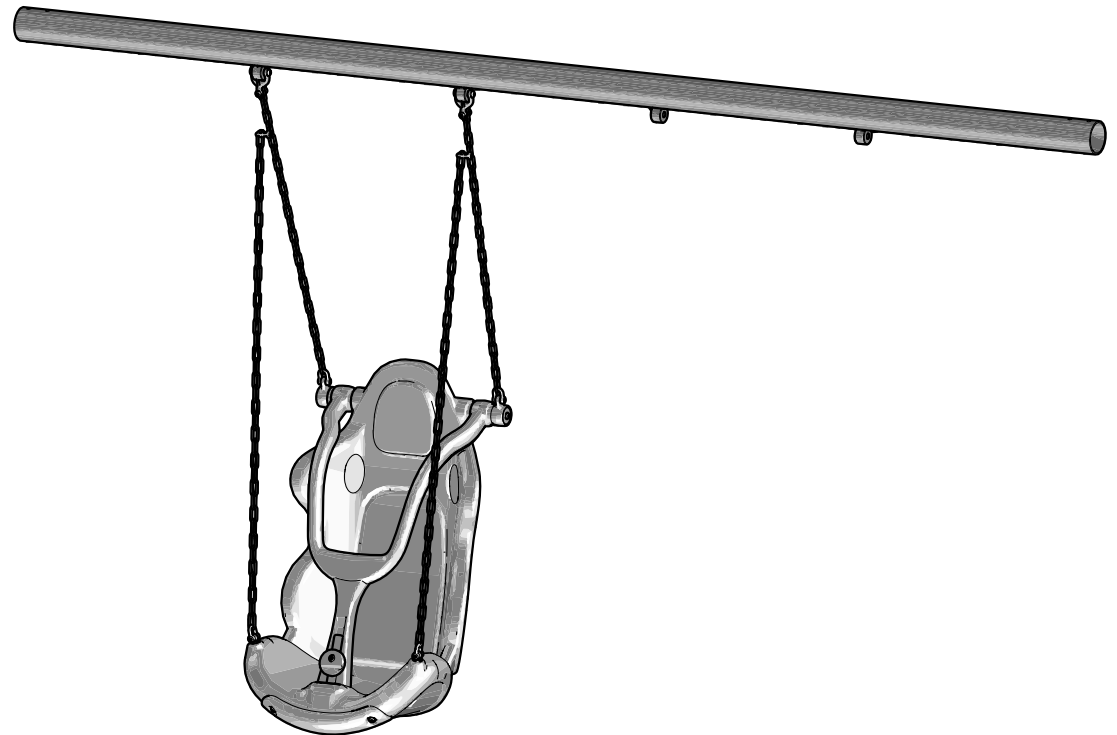
Note: If using the 5" O.D. arch swing, put the shackle in the second chain link from the top.

Installation Instructions



Detail D Step 6

Attach the swing seat assembly to the swing hangers.



Installation Instructions

Notes Before You Begin: Do not over tighten bolts during assembly, only snug tighten them until assembly is complete.

Carefully read and understand these installation instructions before you begin.

Step 1: Before attempting to assemble your equipment, please review all installation information carefully. Should you experience any difficulty during the installation process, please call us at the phone number shown on the last page of these instructions.

Step 2: Separate and identify all components and hardware.

Step 3: Attach the chains to the accessible swing seat. See **Detail A**. Insert a U-bolt through the chain and into the openings on the swing, attach as shown.

Step 4: Connect the chains together. See **Detail B**. Thread a shackle through the last link of one of the longer "front" chains. Insert the last link of the shorter chain into the open end of the shackle. Insert a bolt through the unthreaded side of the shackle, *through the last link* of the shorter chain, and thread into the opposite side of the shackle. Repeat for the other set of chains.

Step 5: Attach the swing seat assembly to the swing hangers. See **Detail D**. Remove the 1-1/4" bolt from the swing hanger clevis with the included hex wrench. Select the swing seat and place the last link of the longer chain into the open end of the clevis. Re-insert the bolt through the unthreaded side of the clevis, *through* the chain link, and thread into the opposite side of the clevis.

Final Details.

Step 6: Plumb and level the component. Tighten **all** fasteners. Fully tighten all fasteners according to tightening torque specifications.

Torque Specifications:

Bolts and nuts - Snug tighten and then tighten an additional one half turn.

Step 7: Apply the age appropriate label to the swing seat.

Usage Instructions:

To open the yoke - Hold the bottom of the swing with one hand by the bumper. Press the yoke backwards with the other hand by the latch grip, and without releasing pressure, move the latch grip upwards until the bar slides to the top of the groove and pull the yoke toward you.

To close the latch - Pull the yoke down, and hold the bottom of the swing by the bumper. Grab the yoke by the latch grip and move it up until the bar reaches the top of the groove. Without releasing, push the yoke back until the front plate reaches the latch stop plate and release pressure on the latch grip. Move the yoke until the front plate goes inside of the slot in the stop plate and check that the latch is engaged.

XX0891 - ACCESSIBLE SWING SEAT TO 7 ft. TOP RAIL

PART NO.	DESCRIPTION	QTY.
906376	INCLUSIVE RACING SEAT ASSEMBLY-MREC	1
200035993	SHACKLE "D" STYLE 41 mm 300 S.S.(SMALL)	6
200035994	BOLT M10 x 1.5 x 27 mm 300 SS 6-LOBE(SM)	6
ACN0050	CHAIN - 36.47" x # 4/0	2
ACN0053	CHAIN - 51.87" x # 4/0	2
ASY0560	LABEL KIT - 2-12 YEARS ACC. SWING - ASTM	1

XX0892 - ACCESSIBLE SWING SEAT TO 8 ft. TOP RAIL

PART NO.	DESCRIPTION	QTY.
906376	INCLUSIVE RACING SEAT ASSEMBLY-MREC	1
200035993	SHACKLE "D" STYLE 41 mm 300 S.S.(SMALL)	6
200035994	BOLT M10 x 1.5 x 27 mm 300 SS 6-LOBE(SM)	6
ACN0226	CHAIN - 62.99" x # 4/0	2
ACN0227	CHAIN - 44.88" x # 4/0	2
ASY0560	LABEL KIT - 2-12 YEARS ACC. SWING - ASTM	1

XX0893 - ACCESSIBLE SWING SEAT TO 10 ft. TOP RAIL

PART NO.	DESCRIPTION	QTY.
906376	INCLUSIVE RACING SEAT ASSEMBLY-MREC	1
200035993	SHACKLE "D" STYLE 41 mm 300 S.S.(SMALL)	6
200035994	BOLT M10 x 1.5 x 27 mm 300 SS 6-LOBE(SM)	6
ACN0224	CHAIN - 86.62" x # 4/0	2
ACN0225	CHAIN - 69.89" x # 4/0	2
ASY0560	LABEL KIT - 2-12 YEARS ACC. SWING - ASTM	1



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Fasteners

- Inspect for loose fasteners.
Tightening torque specifications are:
Bolts and Nuts: Snug tighten and tighten an additional one-half turn.
- Inspect for missing, worn or broken fasteners. If any missing, worn or broken fasteners are found, refer to the installation instructions for proper replacement fastener. If any damage is detected, barricade equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Plastic Parts

- Inspect all plastic surfaces for sharp points, cracks or jagged edges. If any damage is detected and is determined to be unsafe, barricade equipment to prevent use until repair is completed. Minor burrs or sharp edges may be removed by using a sharp utility knife or block plane to remove sharp burr.

Castings

- Inspect the aluminum castings to insure they are properly secured to the component.
- Visually inspect the castings for cracks or breakage. If any damage is detected, barricade the equipment to prevent use until repair is completed. Contact your sales representative immediately for a replacement part.

Finish

- Inspect metal parts for finish damage.
To repair painted surfaces, sand damaged area with sandpaper and wipe clean. Mask area and paint with primer and allow to dry. Paint primed area with color-matching paint and allow to dry. Recoat area with color-matching paint if required. Drying time is approximately 8 hours between coats.
To repair the deck/stair/ladder/step-up bracket coating, contact the Playworld Systems' Customer Service Department for a coating repair touch-up kit.

Footings

- Inspect component to be solid in footing and secure. If any damage is detected, barricade equipment to prevent use until repair is completed.

Surfacing

- Raking loose-fill surfacing material back into dug out and displaced areas is necessary at frequent intervals to maintain the impact absorption qualities.
- Loose-fill materials must be replenished when the surface level drops below the minimum level to maintain proper depth in accordance with your equipment's critical fall height.
- Eliminate areas of standing water by improving site drainage.
- Contact manufacturer of unitary surfacing material for specific instructions and product to use for cleaning spots and stains.
- Contact manufacturer of unitary surfacing material if rips, tears or missing material is noticed. Follow the manufacturer instructions regarding the appropriate actions necessary for the repair.

Labels

- Inspect all applied labels to ensure labels are secure, not faded or damaged. Contact your local representative if replacement labels are needed.

Replacement Parts

- Refer to your installation instructions to obtain replacement part number.
- Contact your sales representative or call Playworld Systems' Customer Service for a replacement part.

Equipment Maintenance Playworld Systems®

Models XX0891, XX0892, XX0893
Accessible Swing Seat
w/ Galvanized Chain
to 7 ft (2134 mm), 8 ft. (2438 mm),
and 10 ft. (3048) Top Rail



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Inspection Form

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- Document any item from the Inspection Checklist that will require maintenance along with any corrective action on the Maintenance Schedule.
- Be sure to include appropriate dates and signatures on each section to properly document maintenance procedure.

Preventive Maintenance ... for Safety's Sake!

INSPECTION CHECKLIST

	Frequency	Inspection Code	Date	Date Repairs Completed
Inspect plastic parts for damage.	Medium			
Inspect surfacing to insure proper depth and distribution.	High			
Inspect metal parts for structural and finish damage.	Medium			
Inspect for loose, missing, worn, or broken fasteners.	High			

Inspection Codes
P = Pass **F** = Fail
NA = Not Applicable

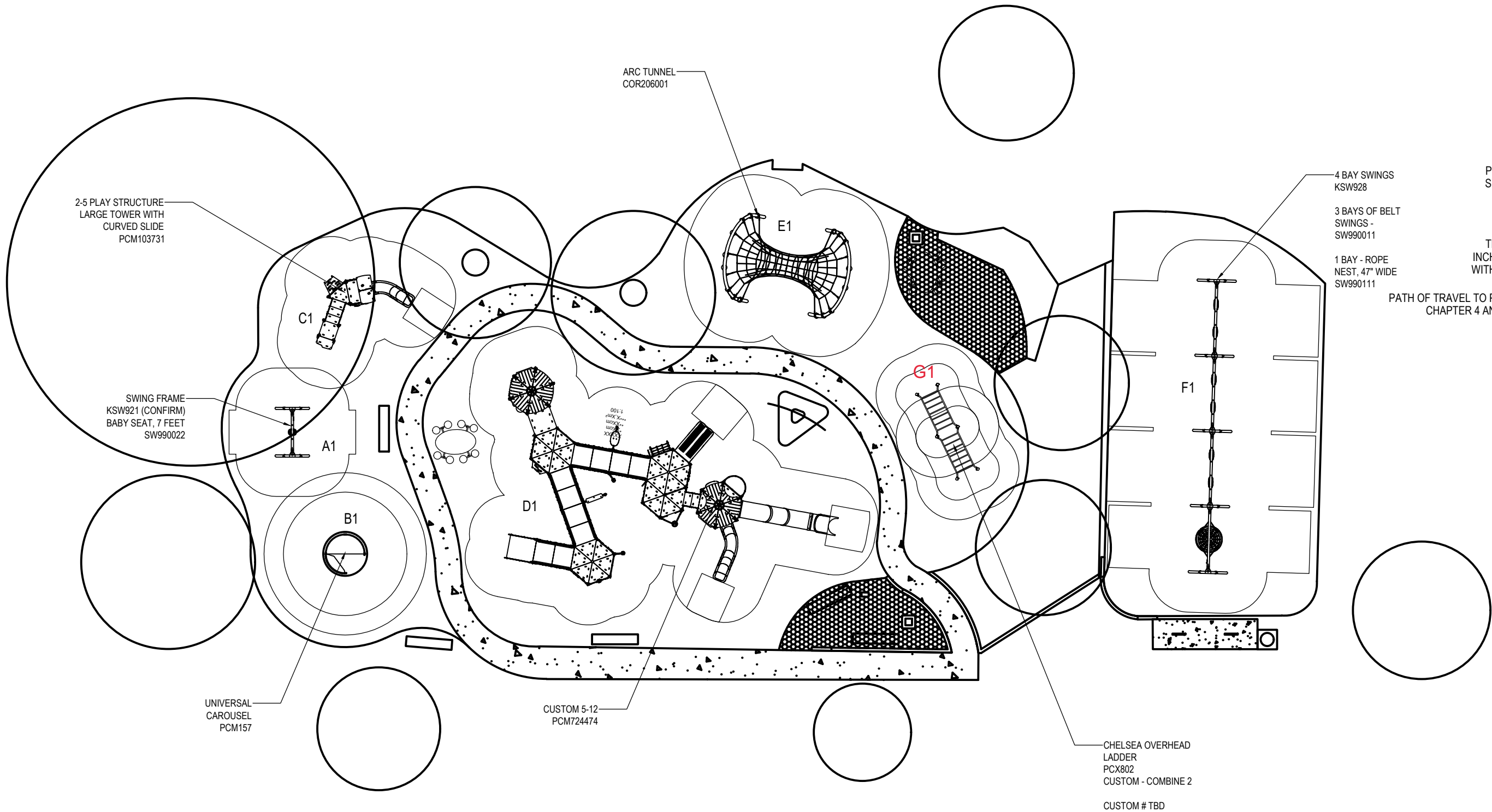
Inspector: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___

MAINTENANCE SCHEDULE

Item in Question	Description of Problem	Corrective Action	Date

Repairer: Name (Please Print) _____ Signature: _____ Date: ___ / ___ / ___





EXPPOSED TREE ROOTS MUST REMAIN OUTSIDE OF USE ZONE.

BRANCHES MUST BE AT LEAST 84-INCHES FROM THE HIGHEST DESIGNATED PLAY SURFACE.

SHADE MUST BE AT LEAST 84-INCHES ABOVE HIGHEST DESIGNATED PLAY SURFACE.

PLAYGROUND SITE MUST MEET SURFACING REQUIREMENTS AS PER ASTM F1292

TRANSFER PLATFORM MUST BE 11-18 INCHES HIGH, MIN. 24" WIDE, AND 14" DEEP WITH A CLEAR GROUND SPACE OF 30" X 48"

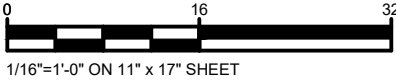
PATH OF TRAVEL TO PLAY AREA IS REQUIRED PER ADA WITH CHAPTER 4 AND 1008.2 ACCESSIBLE ROUTES.

#	Product Number	Product Name	M.F.H.	Count
A	KSW921-CUSTOM_20159868	1 infant		1
B	PCM157-xx01	Universal Carousel	1' 3"	1
C	PCM103731-xx01	Large Play Tower with curved Slide	3' 10"	1
D	PCM724474-US	custom ramp structure		1
E	COR206001-xx01	Arc Tunnel	8' 2"	1
F	KSW928-CUSTOM_20159876	6 belt, 1 basket	7'-11"	1

G PCX760042-overhead ladder 1

Stratton Park

Site Plan



MANUFACTURER'S SHOP DRAWING:

FOR USE BY CONTRACTOR, ENGINEER, OR DESIGN PROFESSIONAL OF RECORD. SEE SIGNED SALES PROPOSAL FOR COMPLETE SCOPE TO BE PROVIDED BY KOMPAN OR REPRESENTING AGENCY. CONFIRM FINAL PLAN AND SCOPE WITH KOMPAN SALES REP OR PROJECT MANAGER PRIOR TO USE FOR REVIEW, PERMITTING, OR CONSTRUCTION.

TO BE READ CONTINGENTLY WITH KOMPAN'S STANDARDS FOR SITE PREPARATION, MATERIALS AND INSTALLATION PROCESSES. PROVIDED AFTER EQUIPMENT PURCHASE. A COMPLIANT PLAYGROUND TO KOMPAN'S STANDARDS MUST SATISFY ALL REQUIREMENTS IN THE CODE OF CONDUCT.

SLAB BY OTHERS UNLESS OTHERWISE NOTED. FOR SURFACE MOUNT OPTIONS, THE CONCRETE REQUIREMENTS MAY BE UP TO 51/2" OF 3,500 PSI MINIMUM COMPRESSIVE STRENGTH. CONTACT KOMPAN FOR SPECIFIC PRODUCT REQUIREMENTS. ALL COMPOSITE STRUCTURES SHOWN REQUIRE A SITE GRADE OF 2% MAXIMUM, 1% OPTIMAL. SPECIFICATIONS FOR EACH KOMPAN STRUCTURE MAY BE FOUND AT KOMPAN.COM/KOMPANMASTER

DIMENSIONS OF PLAY AREA, SIZE AND ORIENTATION, LOCATIONS OF ALL EXISTING UTILITIES, EQUIPMENT AND SITE FURNISHINGS TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

PREPARED AND PRINTED IN USA BY KOMPAN © 2021 KOMPAN, INC. AUSTIN, TX. USA 800-426-9788

REVIEW BY: DESIGN	DATE: 04/01/22	SHEET: L2.0
REPS NAME: EnWal	DRAWN BY: MirRig	
REV. NO. -	REV. BY: -	REVISION DATE: -

LAYOUT IS IN ACCORDANCE WITH ASTM F1487

Swing Frame, 1 Seat

KSW921

Date

Signature



KOMPAN Portal swings are a modern update on a traditional favorite, constructed from galvanized steel. They are configurable for the unique needs and requirements of every playground site. All Portal swings come standard in 7", 8" or 10" heights with posts made from hot dip galvanized steel. For swing seats, we offer as standard a rubber swing

seat, baby seat, or toddler swing seat for individual use, or the duo swing seat, birds nest, or you & me swing seat for multiple users. The seats are available with either hot dip galvanized chains or stainless steel chains with the option of antiwrap suspension. The modular swing system is also available in multibay configurations with 2, 3, 4 or more sections.



Data is subject to change without prior notice.

Swing Frame, 1 Seat

KSW921



Item no. KSW921-20159868		
Installation Information		
Max. fall height	Custom	
Safety surfacing area	Custom	
Number of installers	2	
Total installation time	4.4	
Excavation volume	Custom	
Concrete volume	Custom	
Footing depth (standard)	Custom	
Shipment weight	Custom	
Anchoring options	In-ground	✓
Warranty Information		

Elevated activities 0	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	0	0
Required	0	0	0

Swing Frame, 1 Seat

KSW921



Vertical posts of hot dip galvanized steel or powder coated on pre-galvanized steel base. Swing frame end connectors and crossbeam of hot dip galvanized steel or powder coated on hot dip galvanized steel base.



KOMPAN heavy duty designed swing hangers of stainless steel with anti-twist function. The hangers are attached to the cross beam on a welded bracket with two bolts. The bearings are embedded with silicone lubricant and needs no further lubrication.



KOMPAN designed the bird's nest seats to be light in weight and in compliance with global safety standards. The soft, shock absorbent bumpers with non-slip surface makes the swing seat extremely user friendly. Choose between a rope version with reinforced PA rope or a molded PE version. Both equipped with soft rubber bumpers.



The standard seats of KOMPAN swings is engineered for maximum safety and durability. The seat two component seat with a PP inner core and outside rubber is produced in one operation. The seats are available with swing chains of either hot dip galvanized steel or stainless steel for all swings heights.



The swing hangers are made of high quality UV-stabilized nylon (PA6) housing with integrated lifetime sealed ball bearings. The height adjustable chains are fixed by a stainless steel hook with theft proof snake-eye bolt in a turnable anti twist housing. All seats with two chain fixation are available with either standard or anti-wrap suspension.



Unique designed seats for toddlers: Baby seat of rubber. Toddler seat of PUR with four chain suspension for easy movement. Cradle seat. You & Me swing seat for adult/child or children of different ages to swing together while facing each other.

Item no. KSW921-20159868

Installation Information

Max. fall height	6'3"
Safety surfacing area	Custom
Number of installers	2
Total installation time	Custom
Excavation volume	Custom
Concrete volume	Custom
Footing depth (standard)	Custom
Shipment weight	Custom
Anchoring options	In-ground ✓

Warranty Information

Steel post HDG	Lifetime
Swing seat	10 years
Swing hangers	5 years
Chains	10 years
Spare parts guaranteed	10 years

Elevated activities	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	1	1
Required	1	1	1

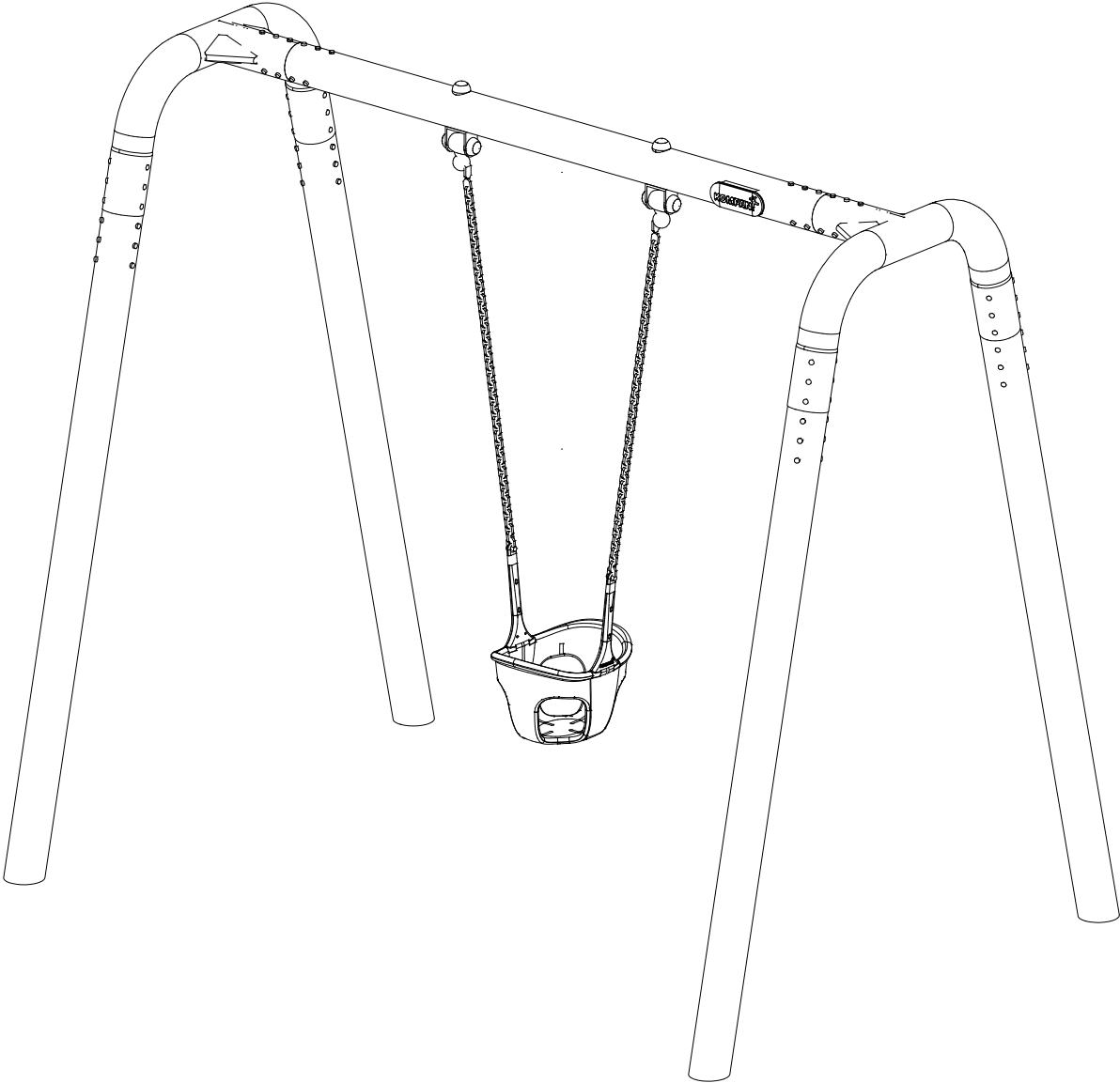
Swing Frame, 1 Seat

KSW921



KSW921
ID 20159868
MIRRIG
2022-04-01

Colorline:	Anthracite
Foundation:	90 cm
Norm:	ASTM
Units:	inch
Post Material:	Anthracite_Matt



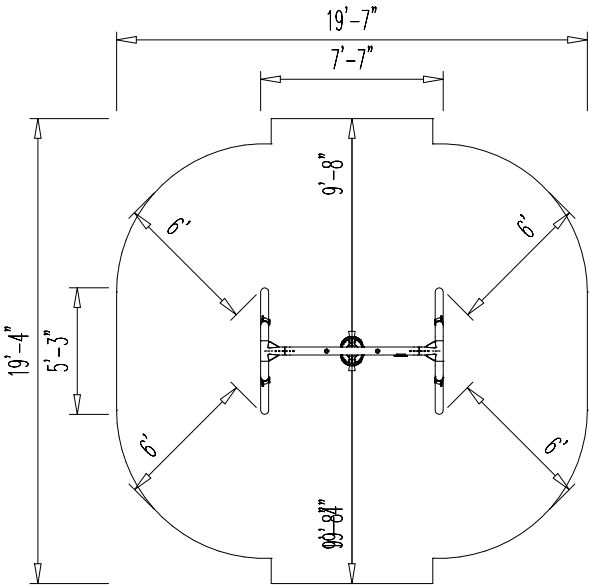
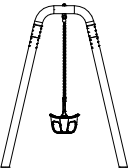
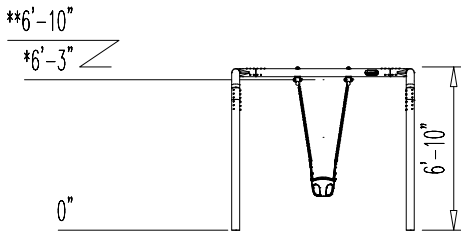
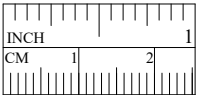
Swing Frame, 1 Seat
KSW921

ASTM



KSW921
ID 20159868
MIRRIG
2022-04-01

Scale: 1/8" = 1'-0"






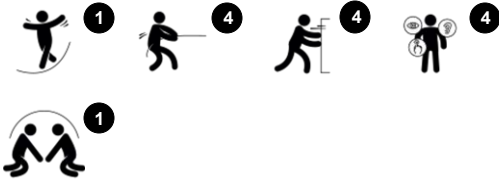
Universal Carousel

PCM157

Date _____ Signature _____



Item no. PCM157-0201	
General Product Information	
Dimensions LxWxH	6'10"x6'10"x2'4"
Age group	2 - 12
Play capacity (users)	8
Color options	  



WOW – this is play for everyone, no matter their abilities. The huge truly inclusive, universal design carousel attracts big groups of children and adults in for a spin. Due to its versatility, it appeals to children and adults again and again. The ground-level design makes the carousel accessible to everyone. The bench provides a comfortably seated spin. The handholds

function from both sides. From the inside they offer good support, while from the outside they get the carousel moving. Spinning on this carousel develops the vestibular system, sense of balance and spatial awareness. The benefits trained through play also include social skills, such as cooperation and empathy, by assisting friends of all abilities to spin and helping others

wanting to join or exit. It is play with a purpose for all.



Universal Carousel

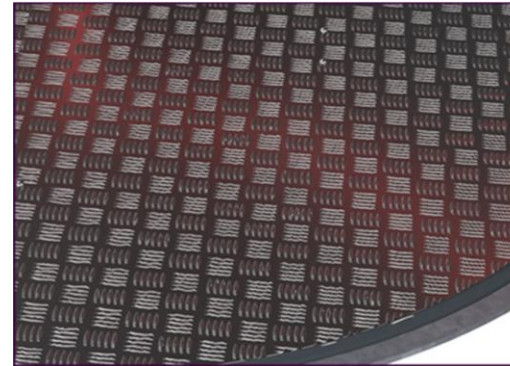
PCM157



Heavy duty designed welded carousel chassis of square steel pipes. The steel surfaces are hot dip galvanized inside and outside. The galvanization has excellent corrosion resistance in outside environments and is maintenance free.



The metal parts are made of high quality steel, hot dip galvanized inside and outside with lead free zinc. On the outside, there is an additional layer of powder coating. This ensures both excellent corrosion resistance and colorful design expression.



Deck plate of 3mm thick non skid aluminum or 17,8mm thick HPL plate. For warm locations KOMPAN recommends HPL deck plate as the aluminum will get hot in sunny conditions. Both deck plate ensures safe play for all users and are maintenance free.



Seat is made of HPL with a thickness of 17.8mm with a very high wearing strength and a unique KOMPAN nonskid surface texture.



The roller system is designed with a fully closed lifetime lubricated center bearing supported by 10 wheels with a diameter of 125mm. The outer wheels ensures a smooth rotation under heavy load.



The outside hot dip galvanized steel ring makes a clear indication where the rotation deck begins.

Item no. PCM157-0201

Installation Information

Max. fall height	1'3"
Safety surfacing area	483 ft2
Number of installers	2
Total installation time	4.7
Excavation volume	3.03 yd3
Concrete volume	0.81 yd3
Footing depth (standard)	1'3"
Shipment weight	830 lbs
Anchoring options	In-ground ✓

Warranty Information

Hot dip galvanized steel	Lifetime
Aluminum deck	15 years
HPL seat	15 years
Bearing construction	5 years
Spare parts guaranteed	10 years

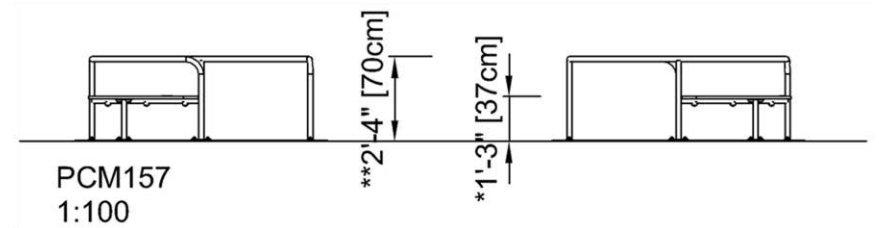
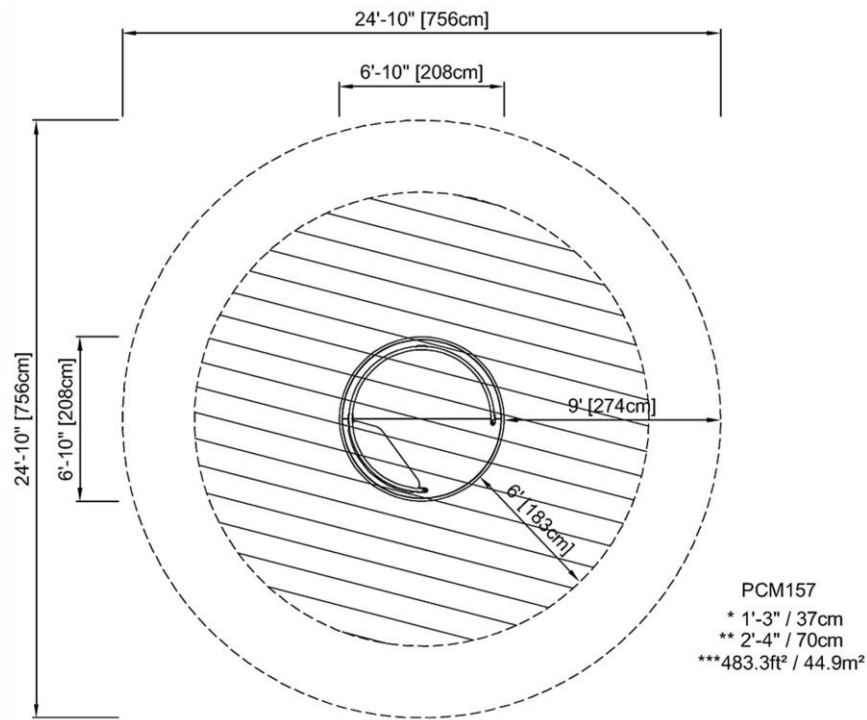
Elevated activities 0	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	1	1
Required	0	1	1

Universal Carousel

PCM157

* Max fall height | ** Total height | *** Safety surfacing area

* Max fall height | ** Total height



[Click to see 1:100 ratio TOP VIEW](#)

[Click to see 1:100 ratio SIDE VIEW](#)

Large Play Tower with curved Slide

PCM103731



Date

Signature

Item no. PCM103731-0901

General Product Information

Dimensions LxWxH	16'0"x10'11"x8'3"
Age group	2 - 5
Play capacity (users)	21
Color options	



This activity-packed play unit will appeal to children with its varied play activities. It will attract children again and again. The ladder forms fast access for all to the slide. The climbing wall is a challenging entrypoint that requires several attempts for the less trained climber, but the reward when they complete is wonderful! The climbing wall stimulates cross-

coordination, which has a positive impact on e.g. children's reading skills. Sliding supports balance and posture, both important for managing the world securely. At ground level, responsive play panels form a creative place to socialize. The clock panel invites dramatic play. The music panel stimulates the child's creativity and encourages turn-taking skills while letting

the child explore sound and tonality. All in all, playful space for making friends.



Large Play Tower with curved Slide

PCM103731



Panels of 19mm EcoCore™. EcoCore™ is a highly durable, eco friendly material, which is not only recyclable after use, but also consists of a core produced from 100% recycled material.



Main posts with hot-dip galvanized steel footing are available in different materials: Pressure impregnated pinewood posts. Pre-galvanized inside and outside with powder-coated top finish steel posts. Lead-free aluminum with color anodized top finish. Greenline TexMade posts of 100% post-consumer recycled PE and textile waste.



All decks are supported by uniquely designed low-carbon aluminum profiles with multiple attachment options. The grey-colored molded decks are made of 75% post-consumer ocean waste PP material with a non-skid pattern and texture surface.



The slides can be chosen in different materials and colors: Straight or curved one-piece molded PE slides in yellow or grey. Combined EcoCore™ sides and stainless steel. Full stainless steel in one-piece designs for more vandalism-proof solutions.



KOMPAN GreenLine versions are constructed with the most environmentally friendly materials with the lowest possible CO2e emission factor. TexMade posts, EcoCore™ panels of 100% post-consumer recycled ocean waste, and molded PP decks.

Item no. PCM103731-0901	
Installation Information	
Max. fall height	3'10"
Safety surfacing area	453 ft2
Number of installers	2
Total installation time	22.2
Excavation volume	0.64 yd3
Concrete volume	0.00 yd3
Footing depth (standard)	2'9"
Shipment weight	1,093 lbs
Anchoring options	
Warranty Information	
EcoCore HDPE	Lifetime
Post	10 years
PP Decks	10 years
Spare parts guaranteed	10 years

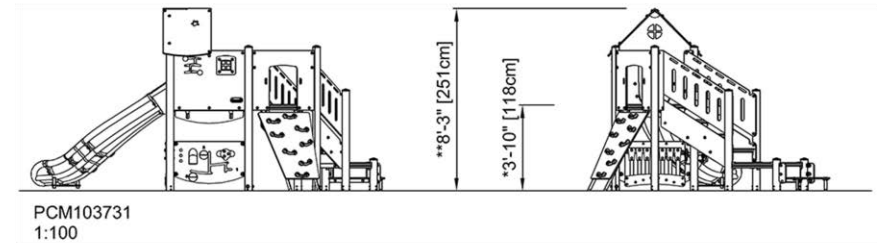
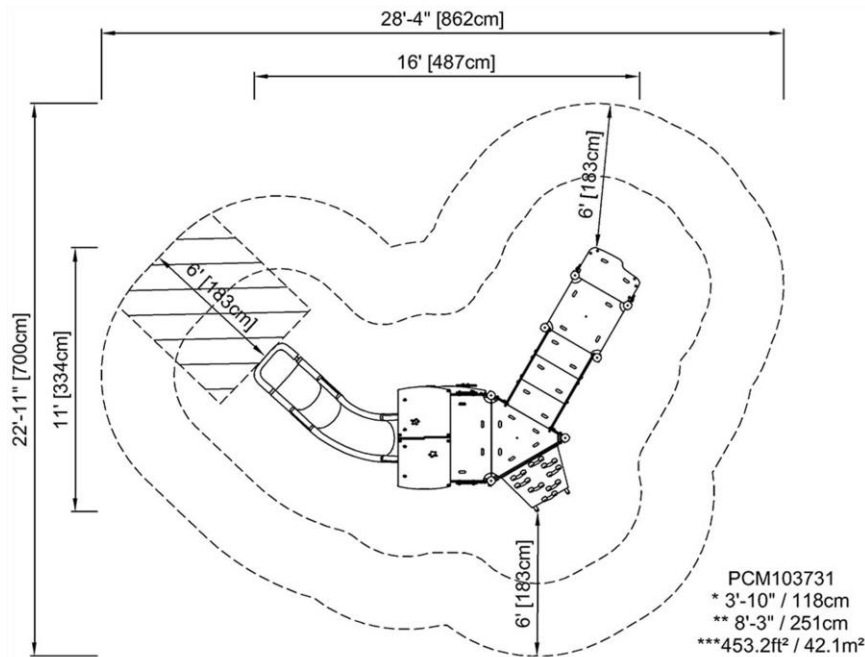
Elevated activities 3	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	3	1	1
Required	2	1	1

Large Play Tower with curved Slide

PCM103731

* Max fall height | ** Total height | *** Safety surfacing area

* Max fall height | ** Total height



[Click to see 1:100 ratio TOP VIEW](#)

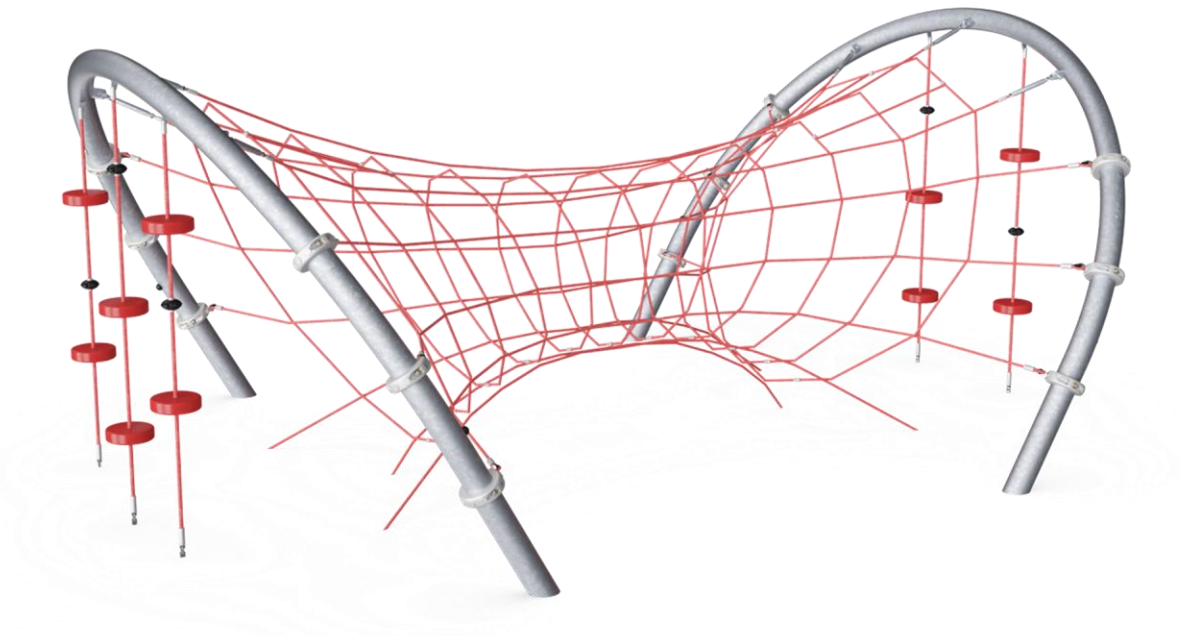
[Click to see 1:100 ratio SIDE VIEW](#)

Arc Tunnel

COR20600




Date

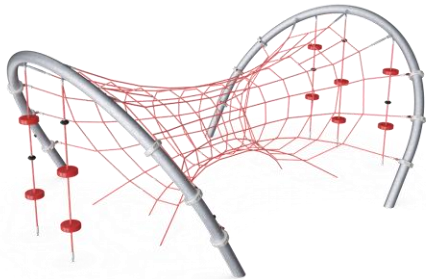
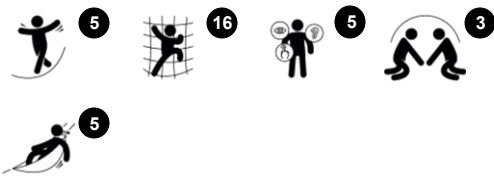
Signature



Item no. COR206001-1101

General Product Information

Dimensions LxWxH	19'4"x13'9"x8'2"
Age group	5 - 12
Play capacity (users)	17
Color options	  



The Arc Tunnel is a three dimensional wobbly climbing structure with remarkable, rounded steel posts to carry the net. The Arc Tunnel offers hours of play for numerous children and adults alike with its vertical as well as horizontal climbing. The structure is a great place for sitting, standing or lying which allows everyone to play together. The play ropes with rubber

seats allow for groups socializing while gently swaying on the ropes. The spacious surface allows for many users. And the transparency makes socializing throughout the net possible. While climbing up, around and through the Arc Tunnel, children's physical skills are supported: their balance, muscle strength and cross coordination are trained. These are all skills

important for sitting still, concentrating, or for navigating spaces with obstacles safely.



Arc Tunnel

COR20600



Corocord 16mm ropes are special 'Hercules'-type with galvanized four-stranded steel wires and a steel wire core. Each strand is tightly wrapped with PES yarn, which is melted onto each individual strand. The ropes are highly wear-and-vandalism-resistant and can be replaced at site if needed.



Corocord 'S' clamps are used as universal connections in Corocord products. 8mm stainless steel rods with rounded edges are pressed around the ropes with a special hydraulic press, making them the ideal connector: safe, durable and vandalism-proof, all while allowing the typical movement of rope play structures.



Fully colored EPDM rubber discs with smooth surface. The moulded EPDM surrounds a hot dip galvanized steel core that ensures both the stability of the discs and durable fixation to the rope.



Corocord aluminium clamps are used as connectors between steel posts and rope. Two aluminium castings are bolted together. The height of the clamps is thus variable.



The steel arches are hot dip galvanized inside and outside with lead free zinc. The galvanization has excellent corrosion resistance in outside environments and requires low maintenance.

Item no. COR206001-1101	
Installation Information	
Max. fall height	8'2"
Safety surfacing area	688 ft2
Number of installers	2
Total installation time	33.1
Excavation volume	8.80 yd3
Concrete volume	6.16 yd3
Footing depth (standard)	3'7"
Shipment weight	1,652 lbs
Anchoring options	In-ground ✓
Warranty Information	
Corocord Rope	10 years
S-Clamps	10 years
Aluminum clamps	10 years
EPDM components	2 years
Spare parts guaranteed	10 years

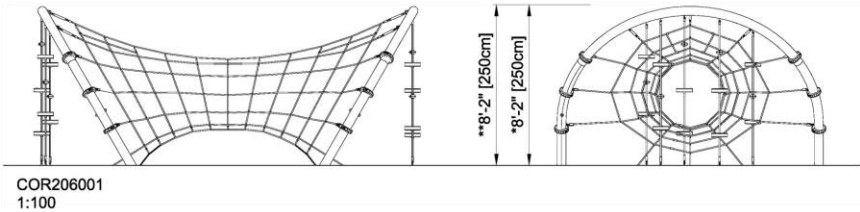
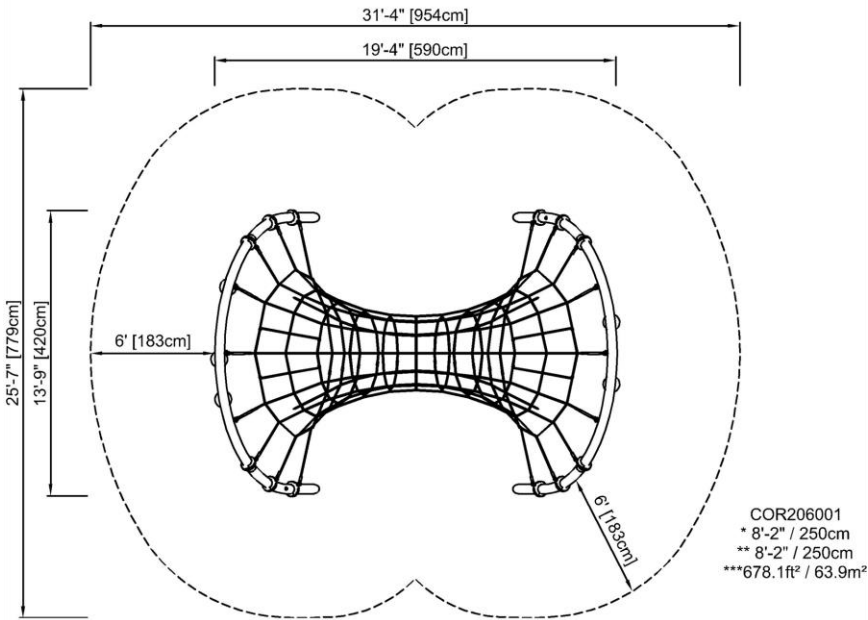
Elevated activities 0	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	1	1
Required	0	1	1

Arc Tunnel

COR20600

* Max fall height | ** Total height | *** Safety surfacing area

* Max fall height | ** Total height



[Click to see 1:100 ratio TOP VIEW](#)

[Click to see 1:100 ratio SIDE VIEW](#)

Swing Frame, 8 Seat

KSW928

Date

Signature

Item no. KSW928-20159876

General Product Information

Dimensions LxWxH 45'11"x6'0"x8'5"

Age group 2 - 12

Play capacity (users) -

Color options



KOMPAN Portal swings are a modern update on a traditional favorite, constructed from galvanized steel. They are configurable for the unique needs and requirements of every playground site. All Portal swings come standard in 7", 8" or 10" heights with posts made from hot dip galvanized steel. For swing seats, we offer as standard a rubber swing

seat, baby seat, or toddler swing seat for individual use, or the duo swing seat, birds nest, or you & me swing seat for multiple users. The seats are available with either hot dip galvanized chains or stainless steel chains with the option of antiwrap suspension. The modular swing system is also available in multibay configurations with 2, 3, 4 or more sections.



Swing, 8 ft H

KSW928



Vertical posts of hot dip galvanized steel or powder coated on pre-galvanized steel base. Swing frame end connectors and crossbeam of hot dip galvanized steel or powder coated on hot dip galvanized steel base.



KOMPAN heavy duty designed swing hangers of stainless steel with anti-twist function. The hangers are attached to the cross beam on a welded bracket with two bolts. The bearings are embedded with silicone lubricant and needs no further lubrication.



KOMPAN designed the bird's nest seats to be light in weight and in compliance with global safety standards. The soft, shock absorbent bumpers with non-slip surface makes the swing seat extremely user friendly. Choose between a rope version with reinforced PA rope or a molded PE version. Both equipped with soft rubber bumpers.



The standard seats of KOMPAN swings is engineered for maximum safety and durability. The seat two component seat with a PP inner core and outside rubber is produced in one operation. The seats are available with swing chains of either hot dip galvanized steel or stainless steel for all swings heights.



The swing hangers are made of high quality UV-stabilized nylon (PA6) housing with integrated lifetime sealed ball bearings. The height adjustable chains are fixed by a stainless steel hook with theft proof snake-eye bolt in a turnable anti twist housing. All seats with two chain fixation are available with either standard or anti-wrap suspension.



Unique designed seats for toddlers: Baby seat of rubber. Toddler seat of PUR with four chain suspension for easy movement. Cradle seat. You & Me swing seat for adult/child or children of different ages to swing together while facing each other.

Item no. Item no. KSW928-20159876

Installation Information

Max. fall height	7'11"
Safety surfacing area	Custom
Number of installers	2
Total installation time	4.9
Excavation volume	Custom
Concrete volume	Custom
Footing depth (standard)	Custom
Shipment weight	Custom
Anchoring options	In-ground ✓

Warranty Information

Steel post HDG	Lifetime
Swing seat	10 years
Swing hangers	5 years
Chains	10 years
Spare parts guaranteed	10 years

Elevated activities 0	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	1	1
Required	1	1	1

Swing, 8 ft H
KSW928



KSW928
ID 20159876
MIRRIG
2022-04-01

Colorline:	Anthracite
Foundation:	90 cm
Norm:	ASTM
Units:	inch
Post Material:	Anthracite_Matt



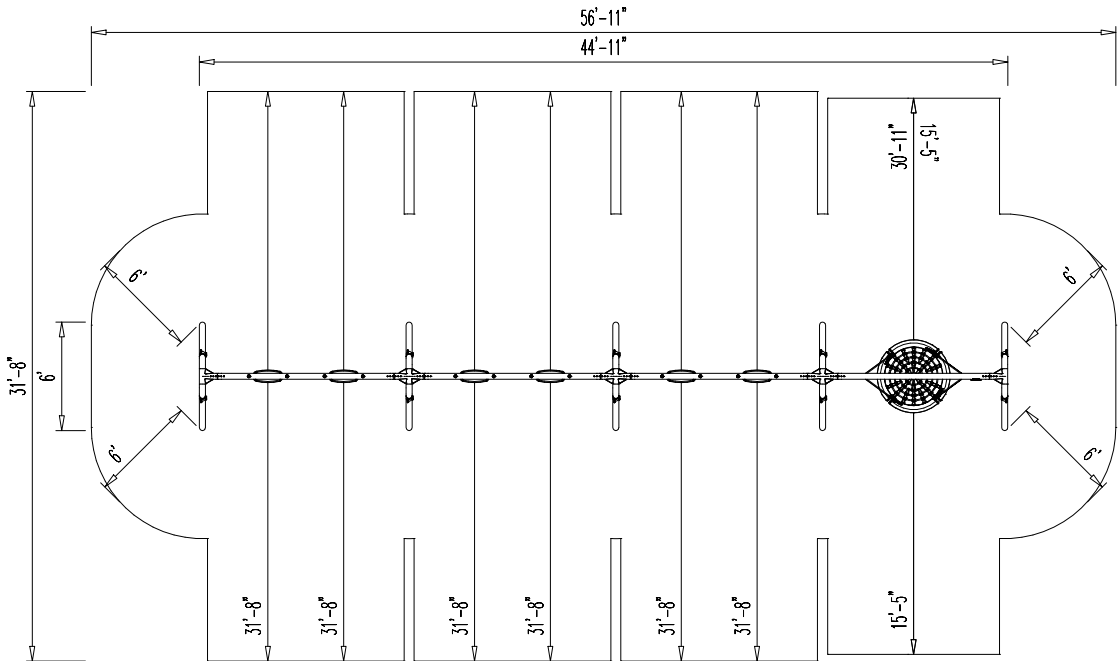
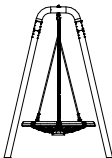
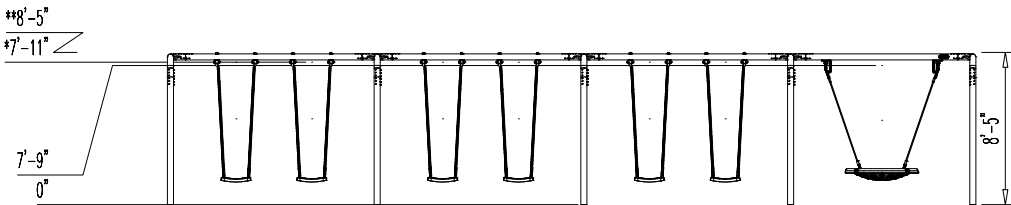
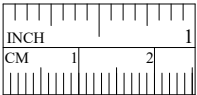
Swing, 8 ft H
KSW928

ASTM



KSW928
ID 20159876
MIRRIG
2022-04-01

Scale: 3/32" = 1'-0"




Chelsea Overhead Ladder

PCX802-760042

Date _____ Signature _____



Item no. PCX802-760042	
General Product Information	
Dimensions LxWxH	Custom
Age group	5 - 12
Play capacity (users)	Custom
Color options	

The CHELSEA Inclined Overhead Ladder, also known as monkey bars, is a favorite activity among children. They keep trying to manage the "walking", hand over hand, from one end to another, which ensures holding power. Besides being great fun the inclined overhead ladder is perfect for developing physical skills, such as overall body control, cross-body coordination,

proprioception and upper body strength. It supports training of many different muscle groups including arms, shoulders and abdominals. To do the "walking" by swinging from one bar to the next is challenging and requires a lot of courage. Trying again and again develops children's overall body control and self regulation, important for their emotional

development, such as their self esteem."



Chelsea Overhead Ladder

PCX802-760042



All steel components are made of high quality materials. The posts have an alloy with improved tensile and yield strength according to the NYCP material specification. The painted aluminum post caps are riveted to the top of the post.



The steel surfaces are hot-dip galvanized inside and outside with lead-free zinc. The galvanization has excellent corrosion resistance in outside environments and requires minimal maintenance.

Item no. PCX802-760042		
Installation Information		
Max. fall height	6'1"	
Safety surfacing area	Custom	
Number of installers	2	
Total installation time	Custom	
Excavation volume	Custom	
Concrete volume	Custom	
Footing depth (standard)	Custom	
Shipment weight	Custom	
Anchoring options	In-ground	✓
Warranty Information		
EcoCore HDPE	Lifetime	
HDG post	Lifetime	
HPL decks	15 years	
Ropes & nets	10 years	
Spare parts guaranteed	10 years	

Elevated activities	Accessible elevated activities	Accessible ground level activities	Accessible ground level play types
Present	0	1	1
Required	0	1	1

Chelsea Overhead Ladder

PCX802-760042

Binding approval for Variant Design

When pressing "Prepare to order" in CRM all purchases are subject to this design. This design is defined under its own KOMPAN identification number, which is stated in upper right corner. All constructional details, dimensions, materials, colours and specifications shown on attached datasheets (plan, side, perspective view + safety zone) are hereby accepted when placing the order. Changes are no longer possible.

Notwithstanding the aforementioned and without changing the overall design, Variant Team may in the construction phase, without obtaining approval, perform smaller modifications when deemed beneficial or necessary for the construction. All other modifications are subject to prior approval.

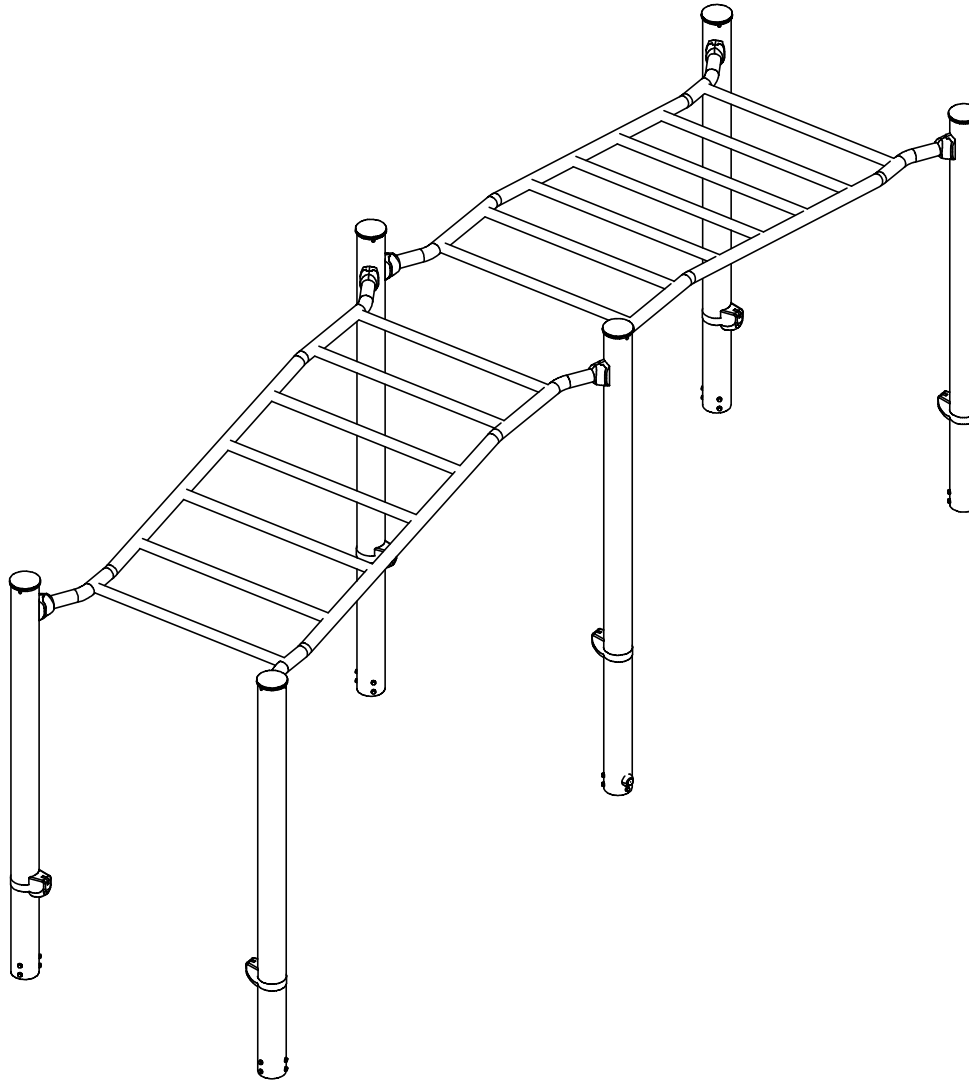
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PCX-CUSTOM

760042

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Chelsea Overhead Ladder

PCX802-760042

ASTM F1487



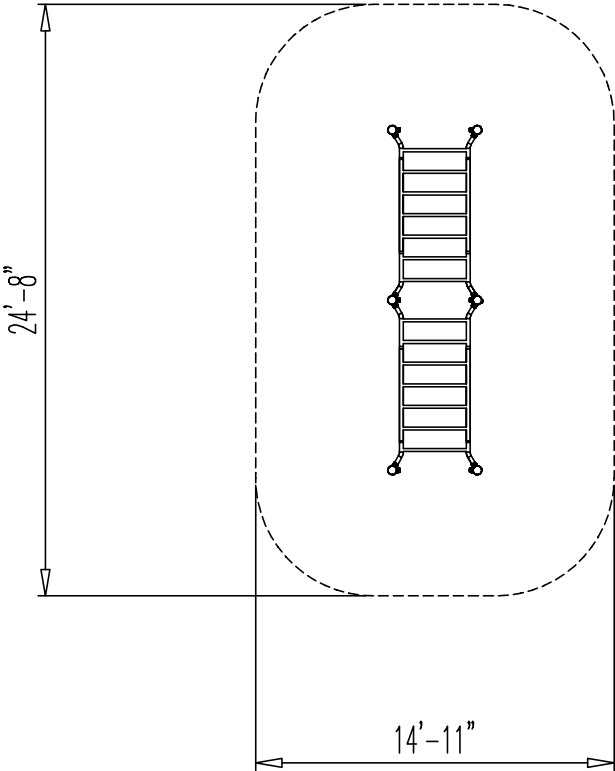
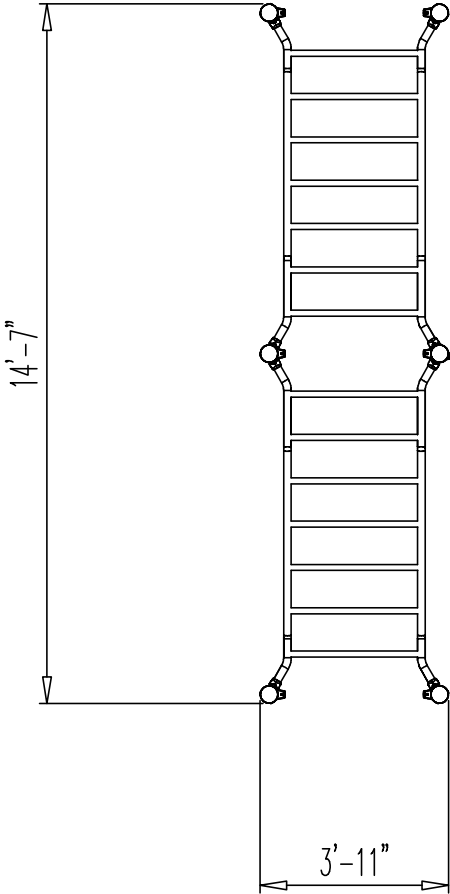
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1':1/4"



Chelsea Overhead Ladder

PCX802-760042

Highest designated play surface

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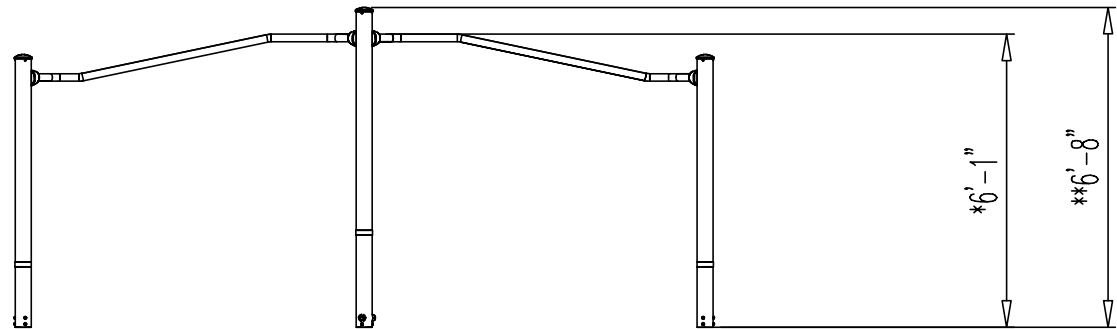
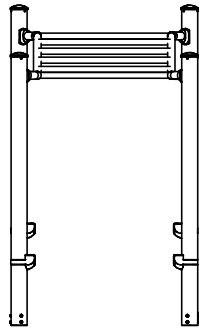
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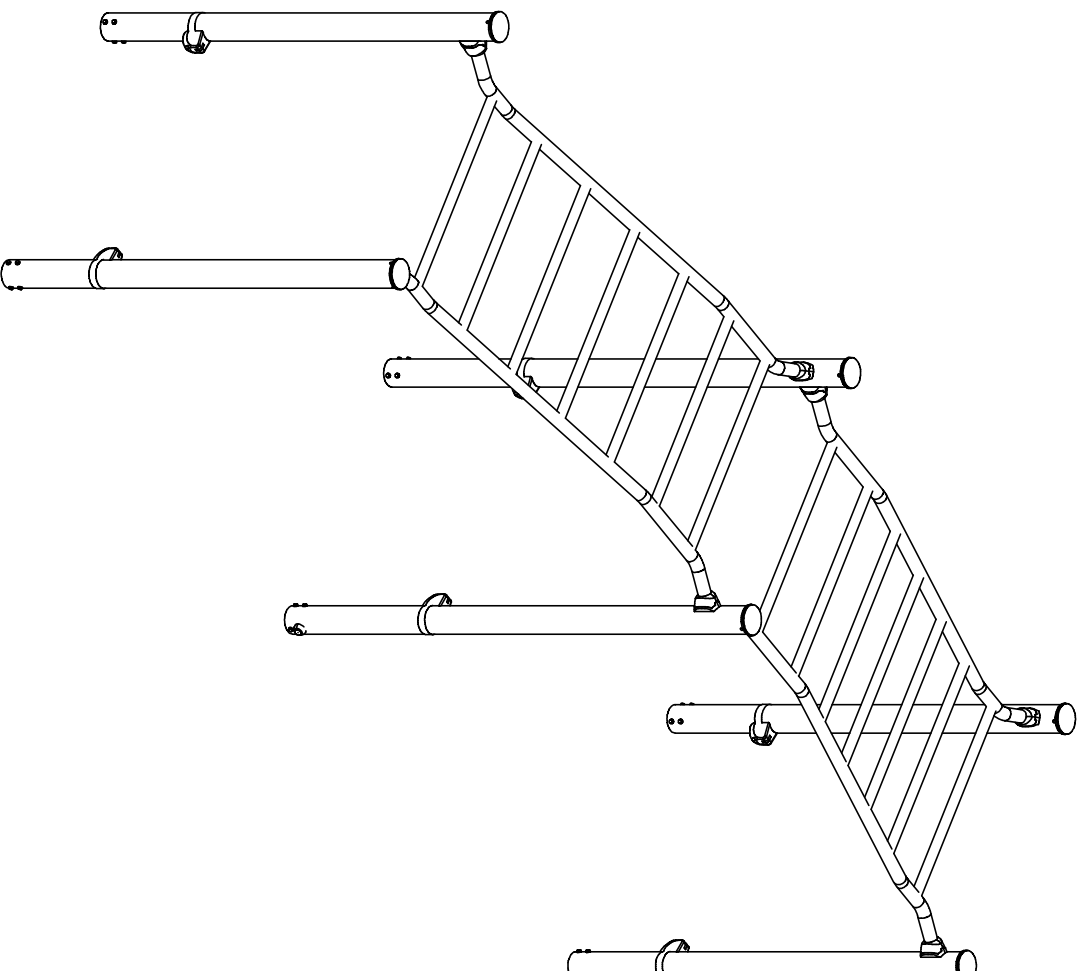
1':1/4"



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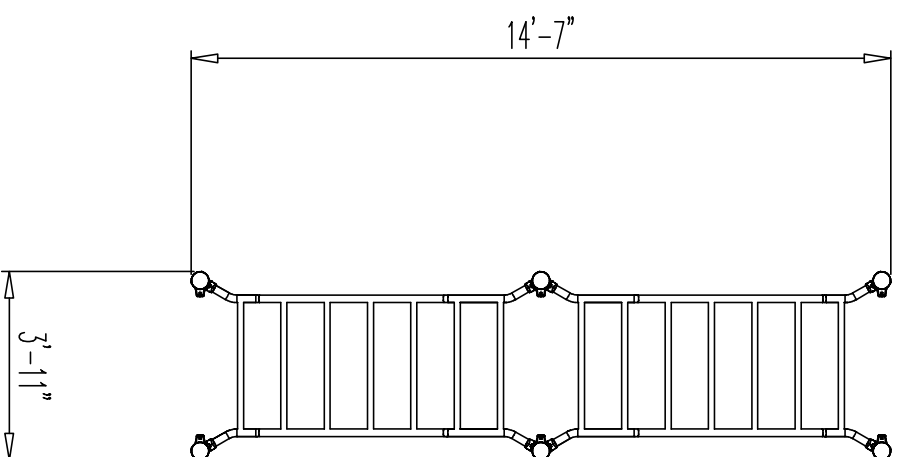
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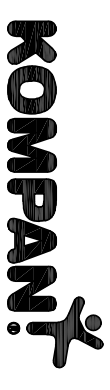
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1:1/4"



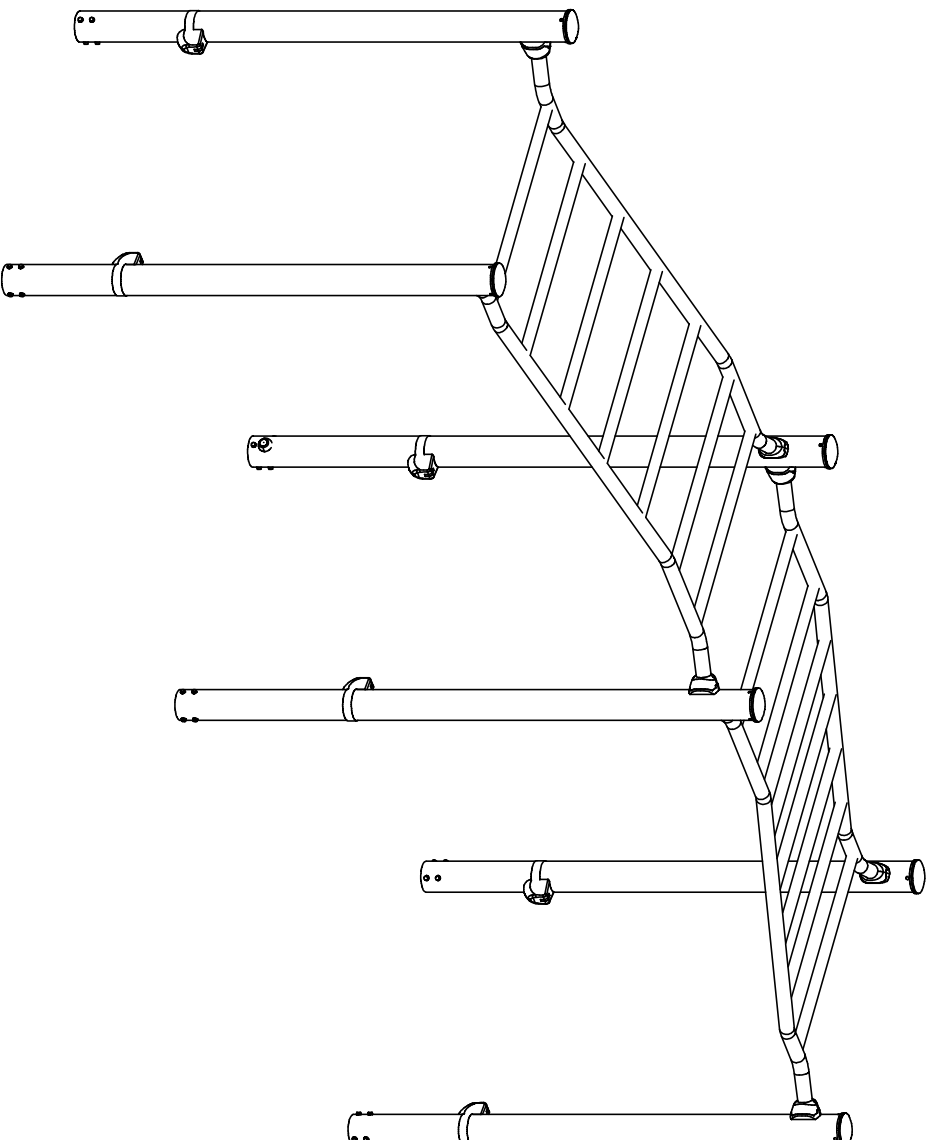


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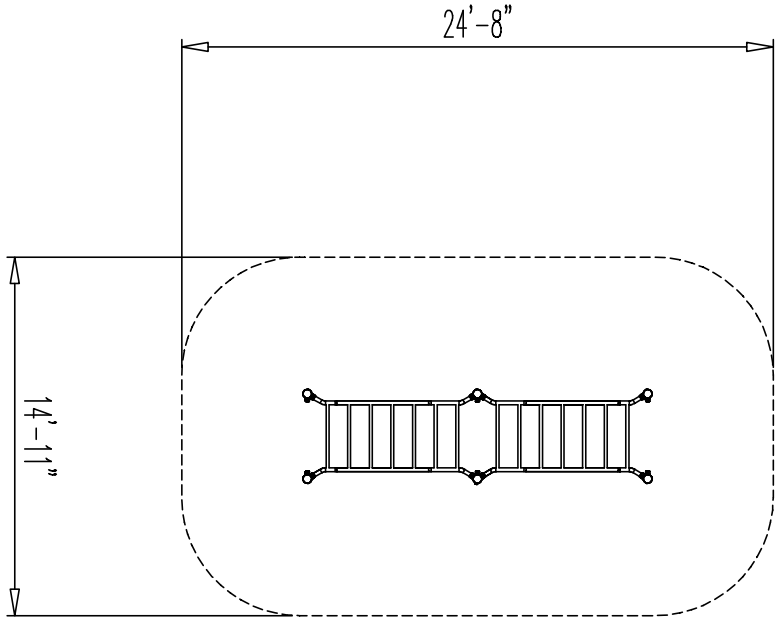
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ASTM F1487



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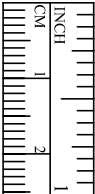
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1:1/8"



Highest designated play surface



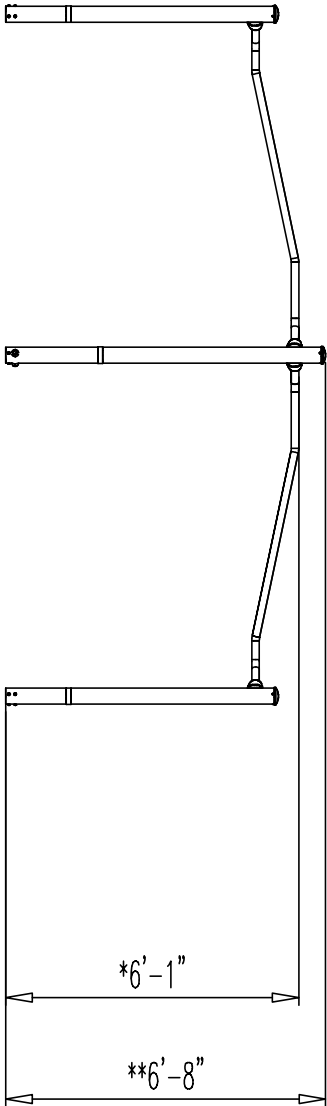
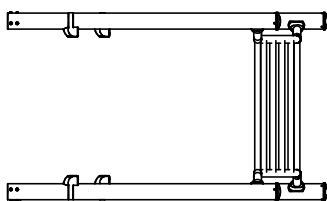
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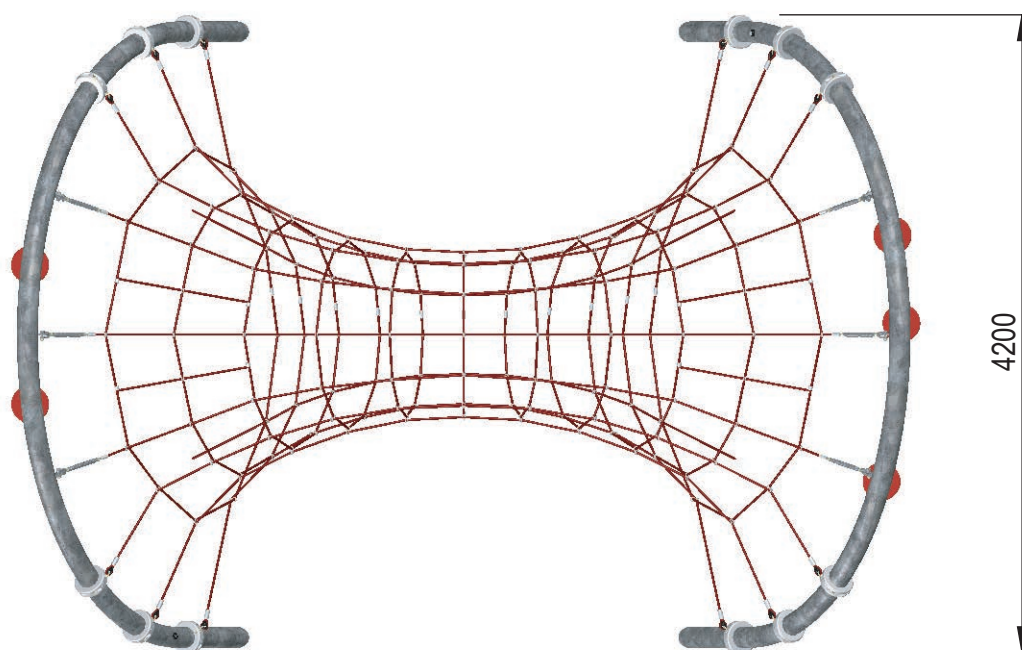
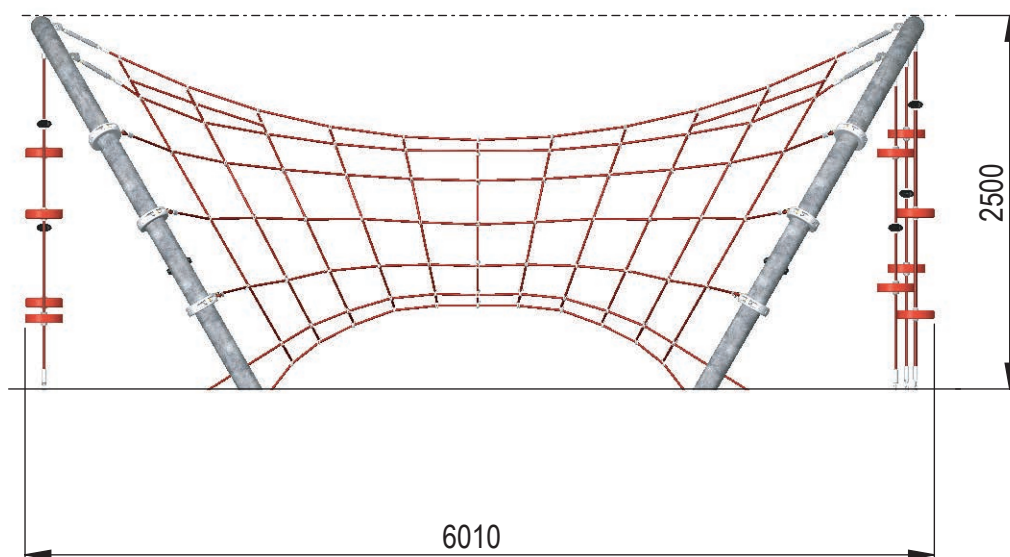
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1:1/4"



Plan and View



O:\2000E_Entdeckerwelten\2060\04-02_techn. Zeichnungen_Intern\2060 Arc Tunnel.dwg
 Conceptual custom design - actual components may vary actual sag could be larger than displayed

scale 1:50

Foundation plan Section drawing

Foundations:

2 A arch foundations see reinforcement drawing

340 x 80 x 65 cm

5 anchor blocks

2 x B1 ; 3 x B2

50 x 50 x 50 cm

1 anchor blocks

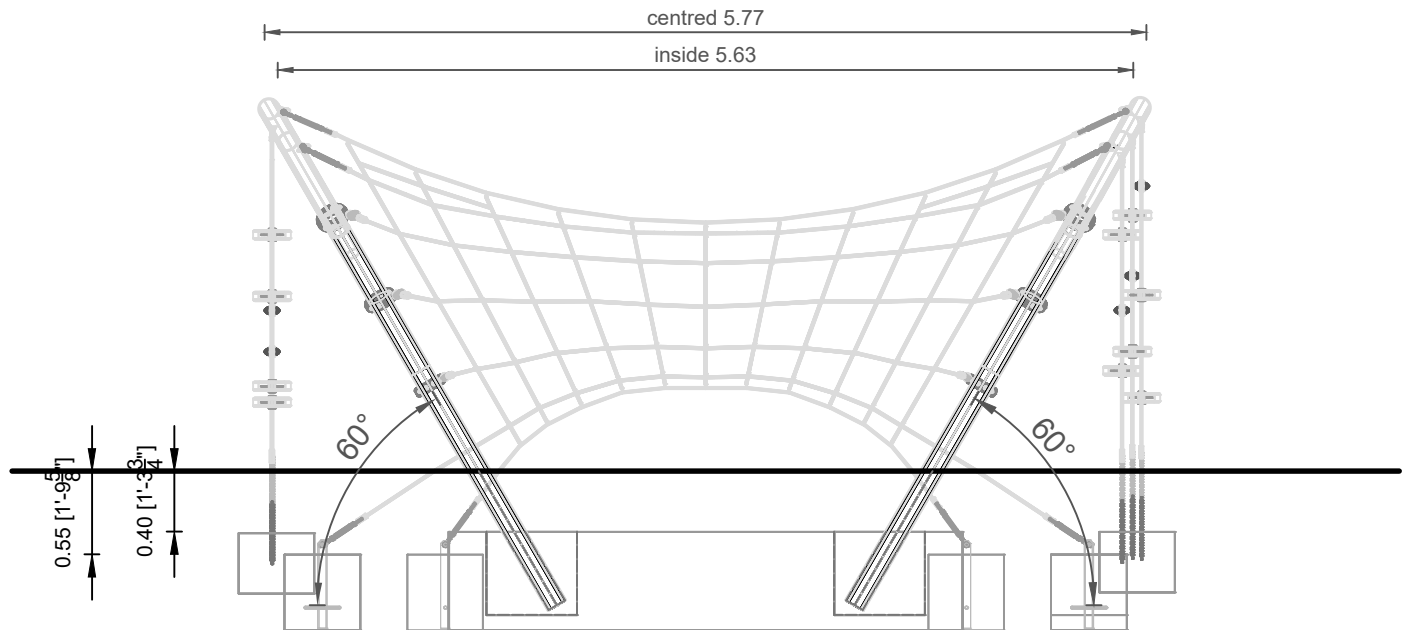
1 x B3

60 x 50 x 50 cm

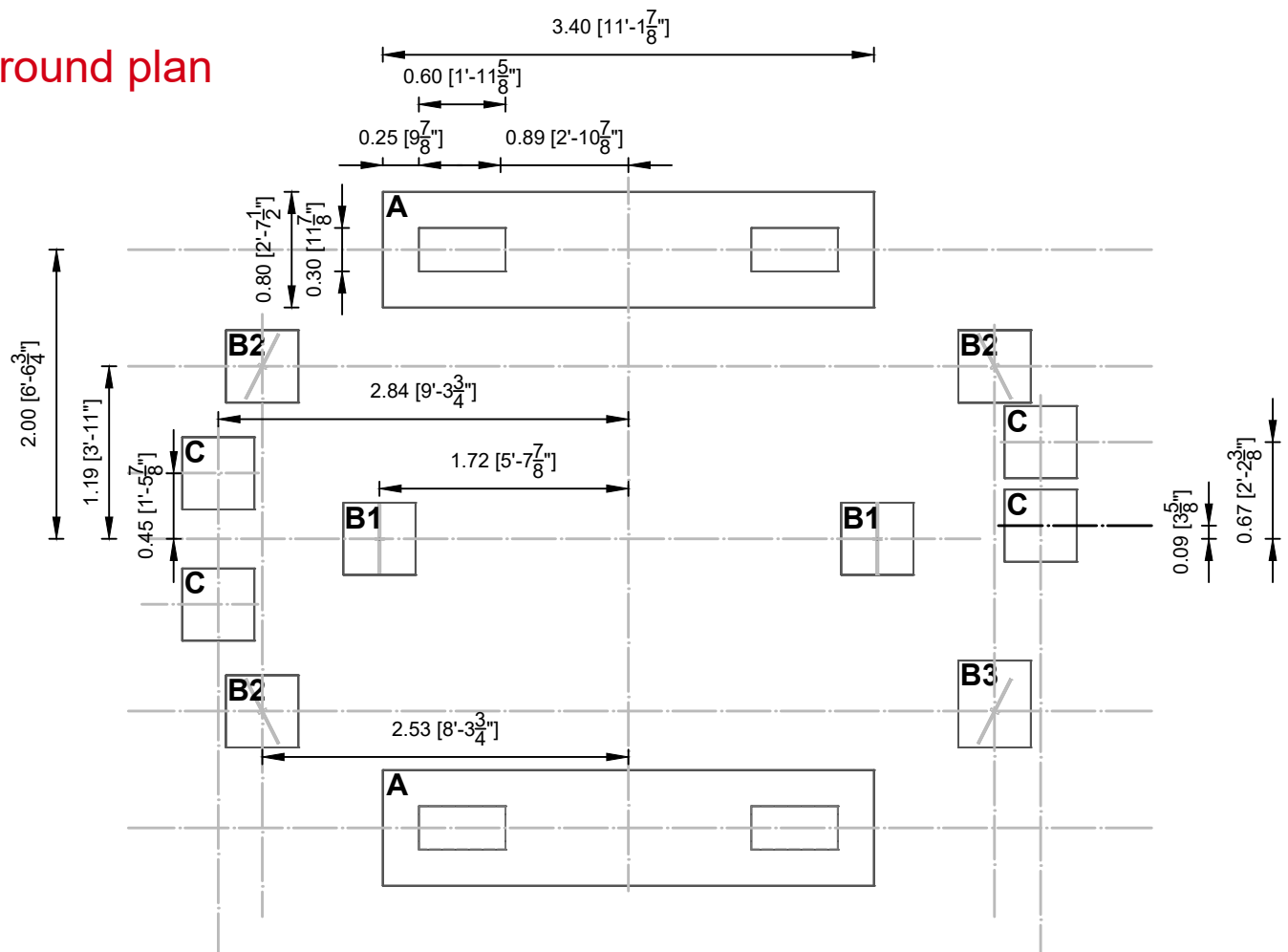
4 Heavy duty anchor blocks

4 x C

50 x 50 x 40 cm



Ground plan



T:_ORIGINALZEICHNUNGEN\2000_Spiel- & Kletternetze\2060\2060 Arc Tunnel_rev3.dwg

Conceptual custom design - actual components may vary actual sag could be larger than displayed

scale 1:50

Foundation plan details

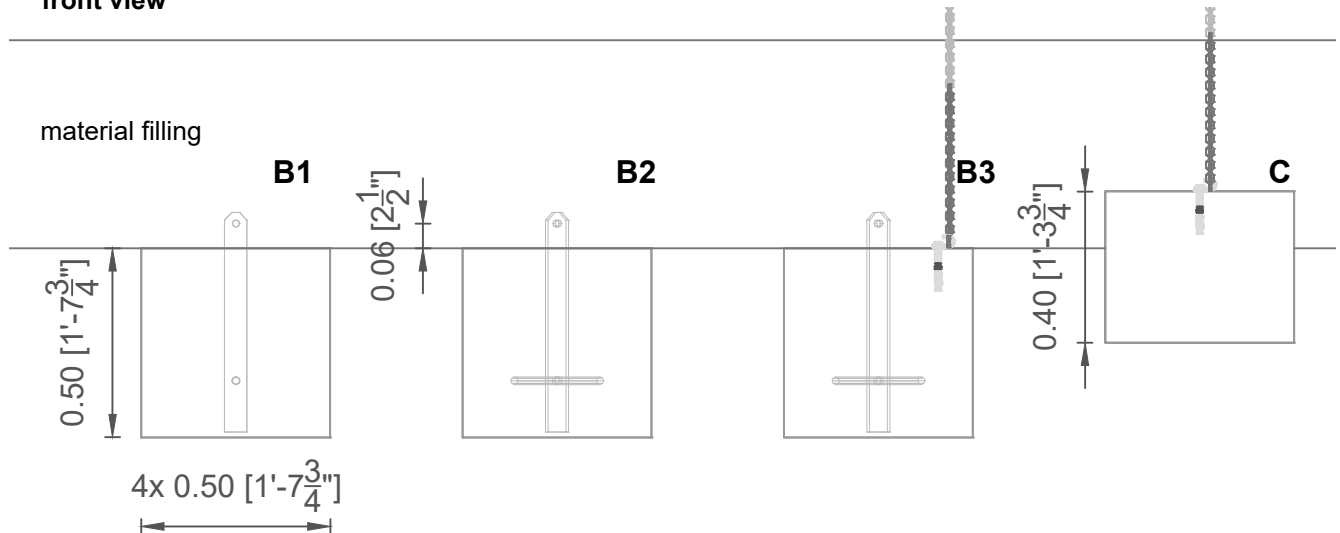
Foundations:

5 anchor blocks
2 x B1 ; 3 x B2
50 x 50 x 50 cm

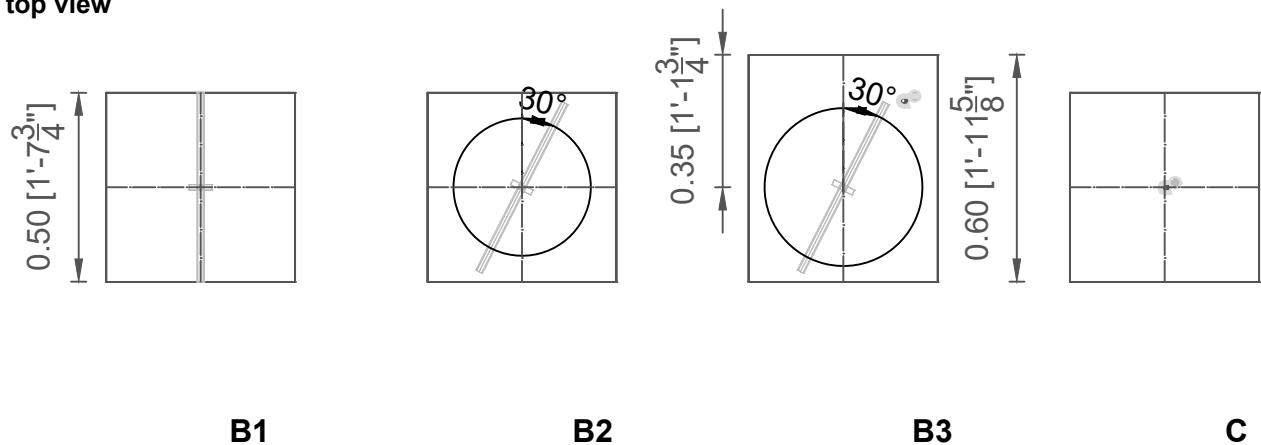
1 anchor blocks
1 x B3
60 x 50 x 50 cm

4 Heavy duty anchor blocks
4 x C
50 x 50 x 40 cm

front view



top view



Quality of concrete:

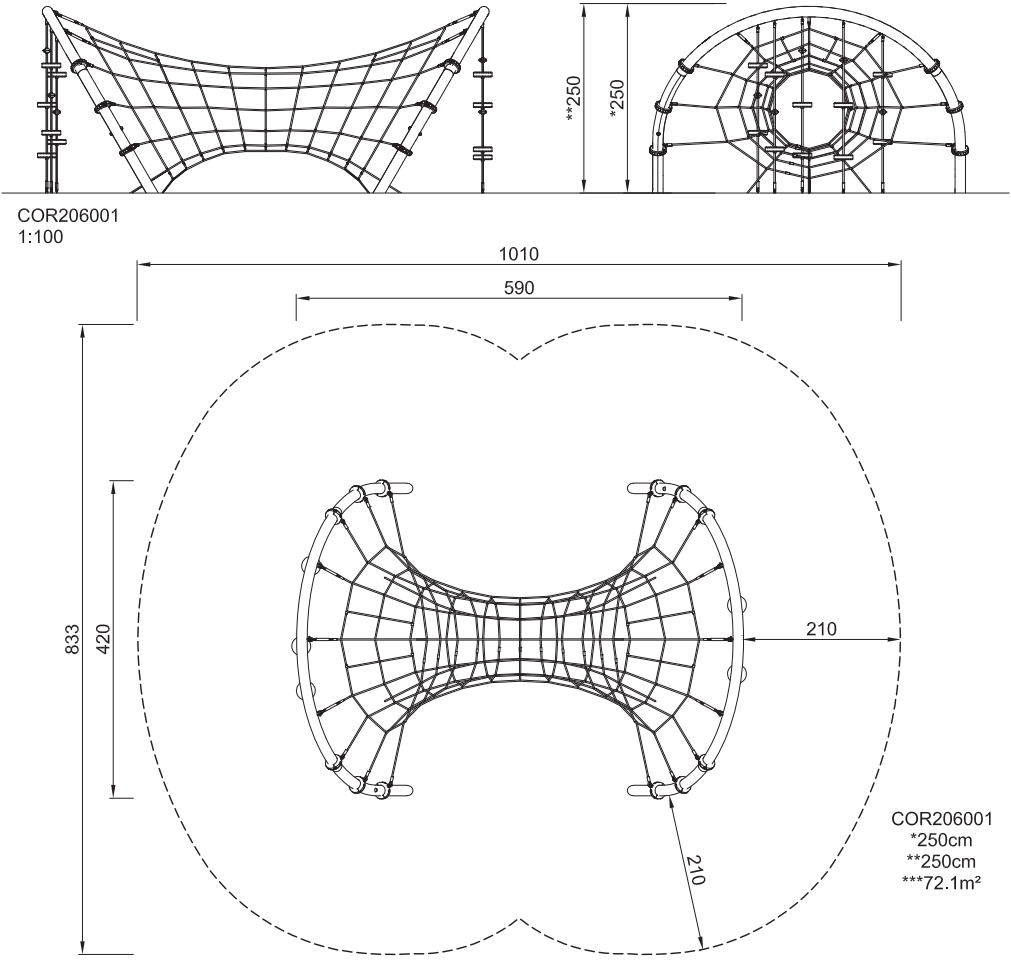
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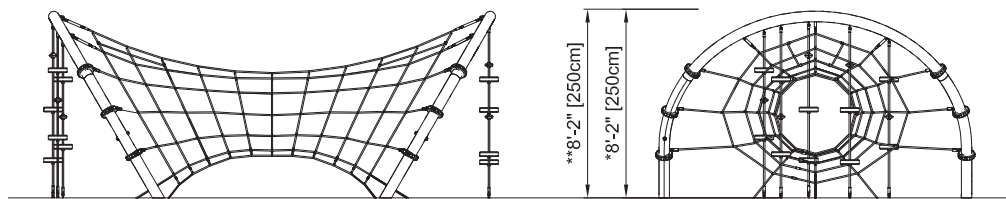
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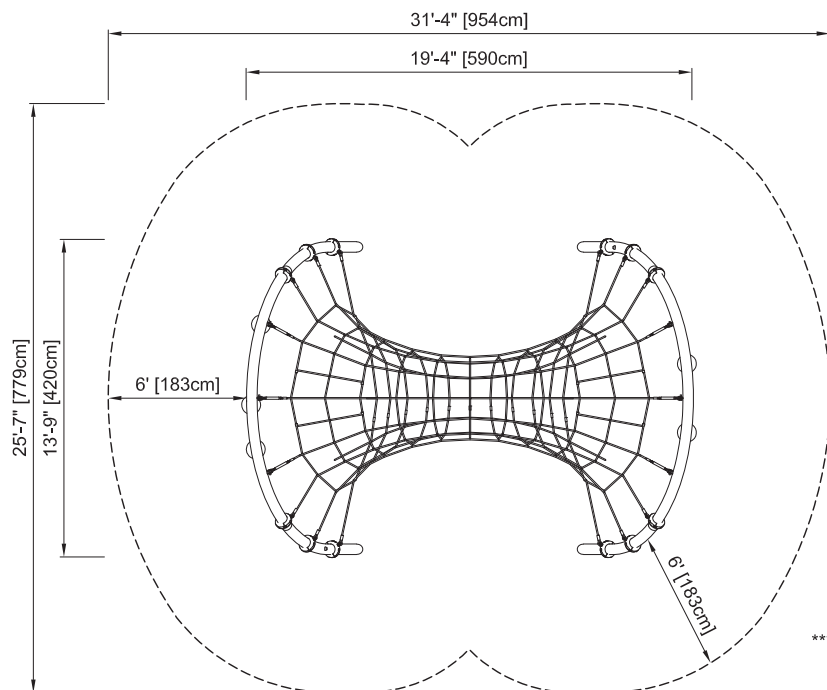
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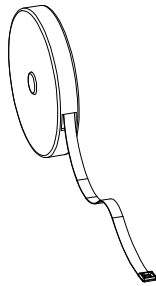


COR206001
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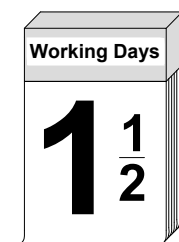
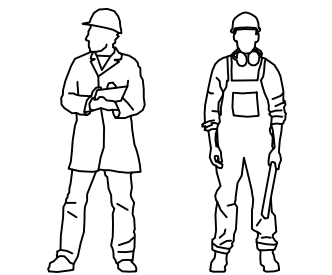
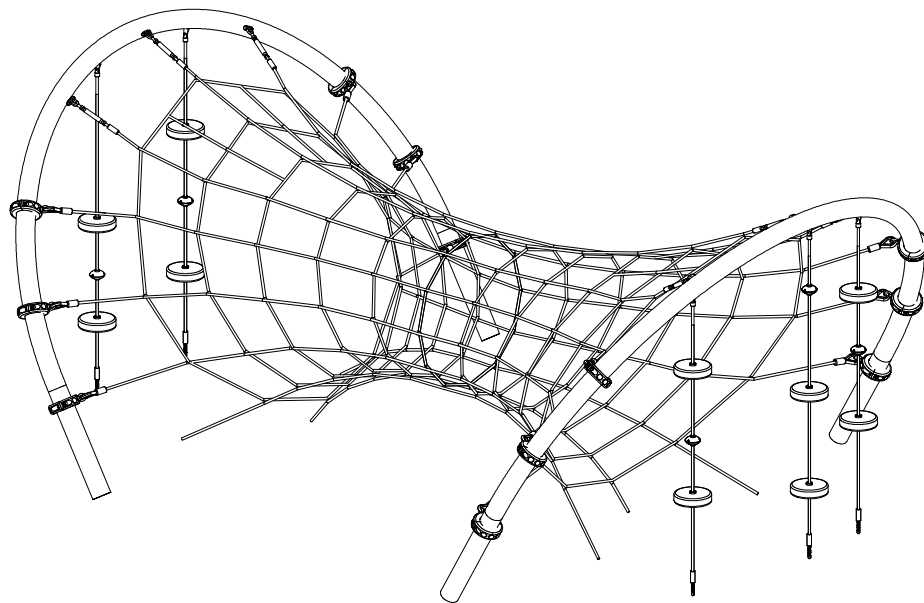


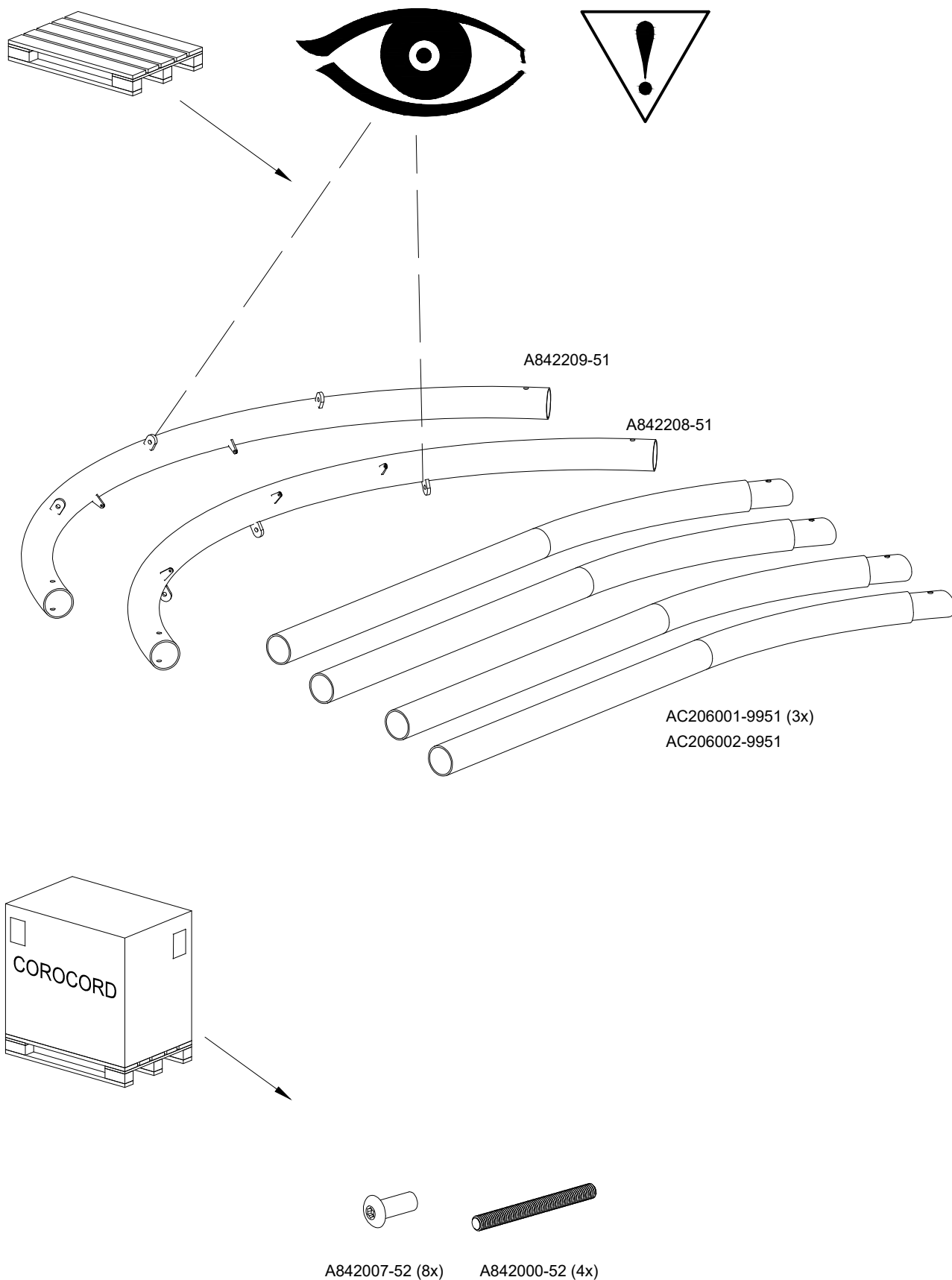
COR206001
* 8'-2" / 250cm
** 8'-2" / 250cm
*** 678.1ft² / 63.9m²

Installation instruction
 Montageanleitung
 Instructions de montage
 Indicaciones de montaje
 Istruzioni di montaggio
 Montagehandleiding
 Monteringsanvisning
 Monteringsvejledning
 Инструкция по установке
 Asennusohje

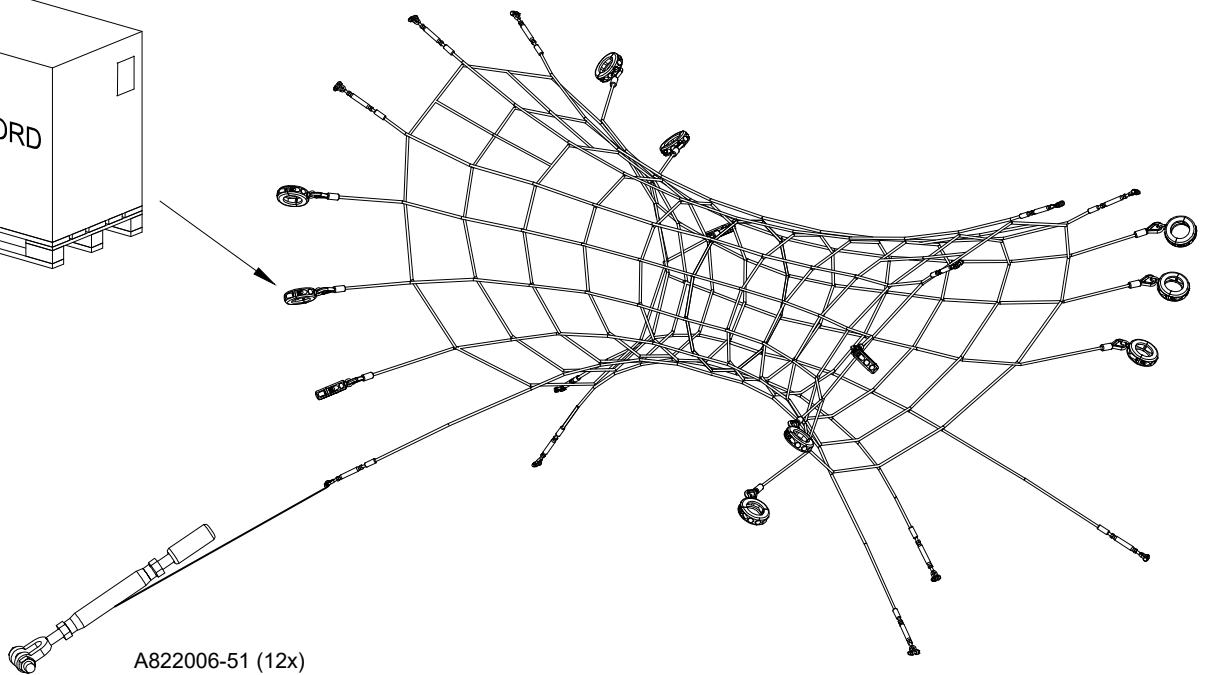
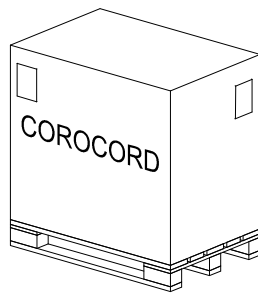


Check foundation before installation!
 Vor Montagebeginn Fundamentierung überprüfen!
 Vérifier les fondations avant de commencer le montage !
 ¡Compruebe la fundación antes de la instalación!
 Verificare le fondamenta prima di procedere all'installazione!
 Controleer fundering voor de installatie!
 Kontrollera fundament innan installation!
 Check fundament før installation!
 Перед установкой проверить основание!
 Tarkista ankkuroidin perustus ennen asennusta!

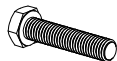




O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg



A822006-51 (12x)



200707412055 (24x)



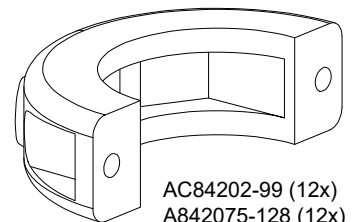
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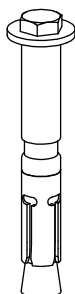
201305013024 (72x)



OBV-1912022-A2 (24x)

AC84202-99 (12x)
A842075-128 (12x)

A842045-52 (5x)



340707912105 (5x)

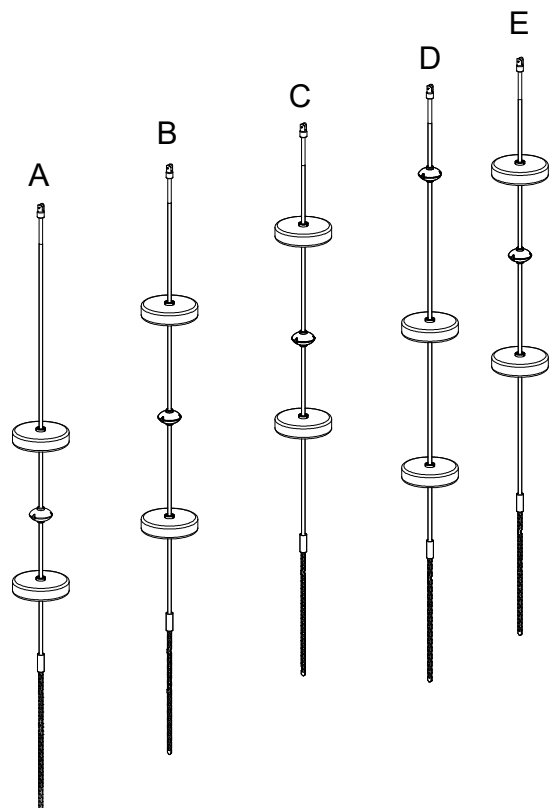
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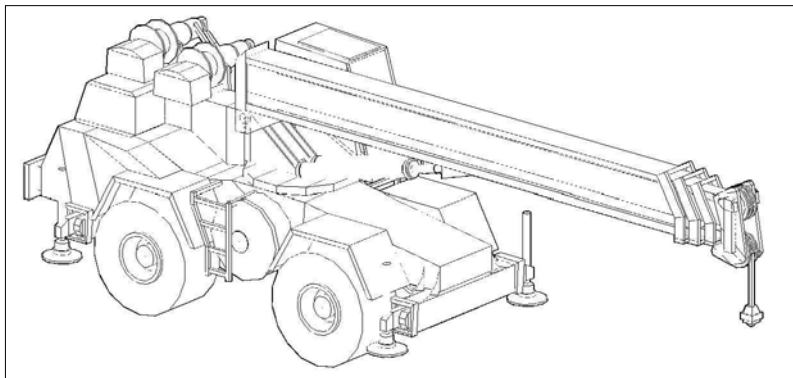
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C - N842003-11

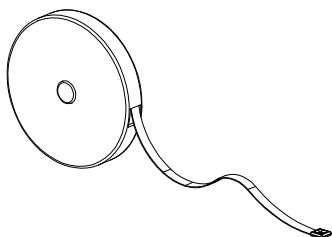
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E - N842005-11

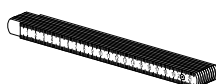




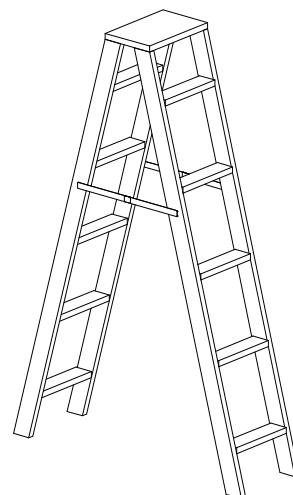
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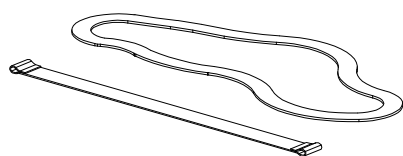
1x



1x



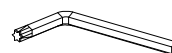
1x



1x

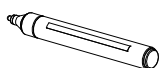


2x

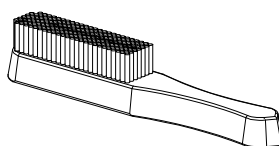


T 25

1x



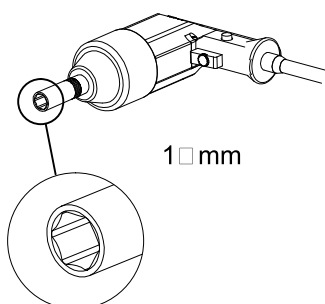
1x



1x



1x



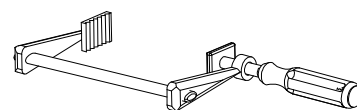
1 □ mm

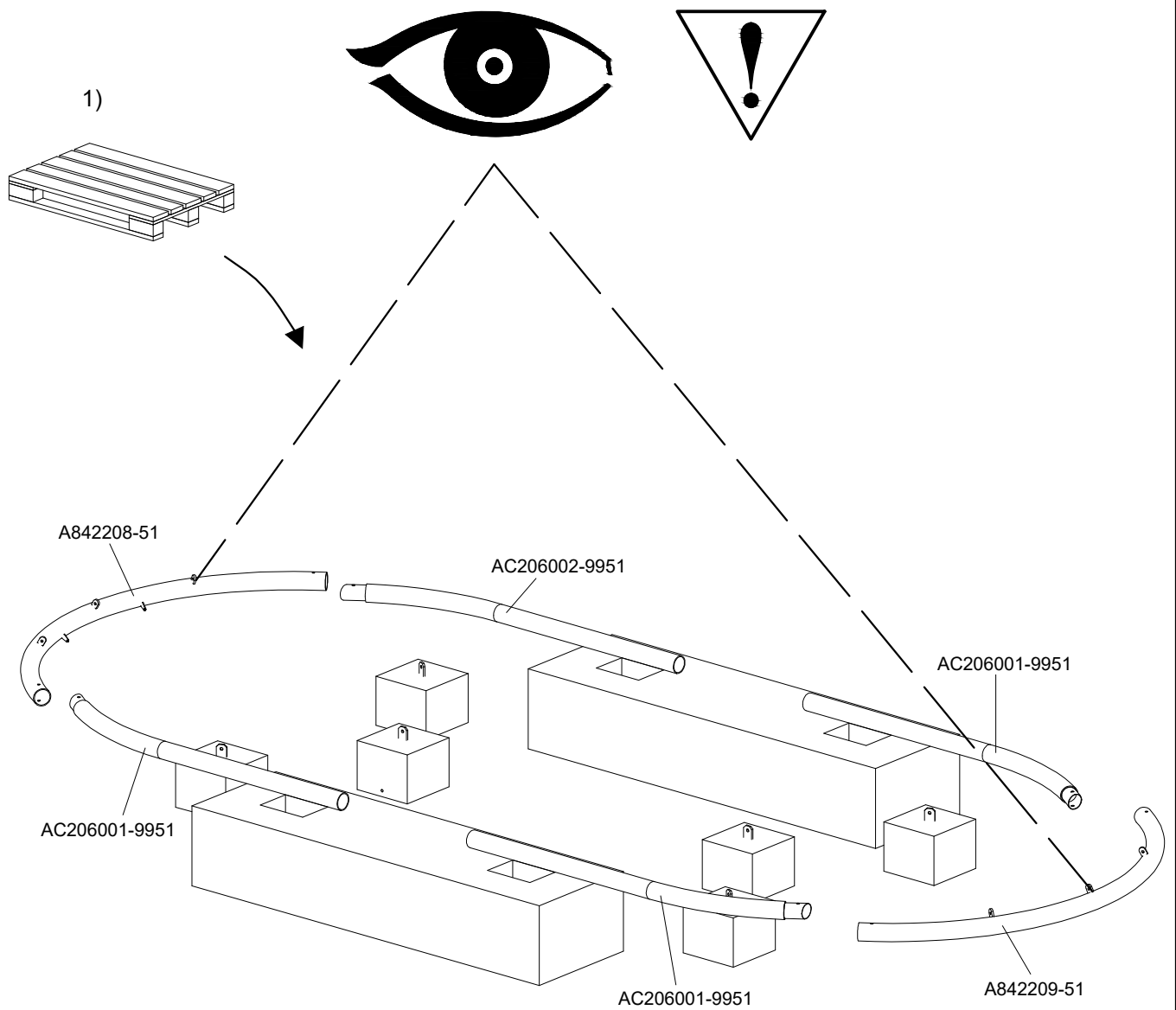
1x



1 □ mm
24 mm
30 mm

1x





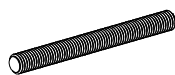
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A

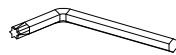


A842007-52 (8x)

B



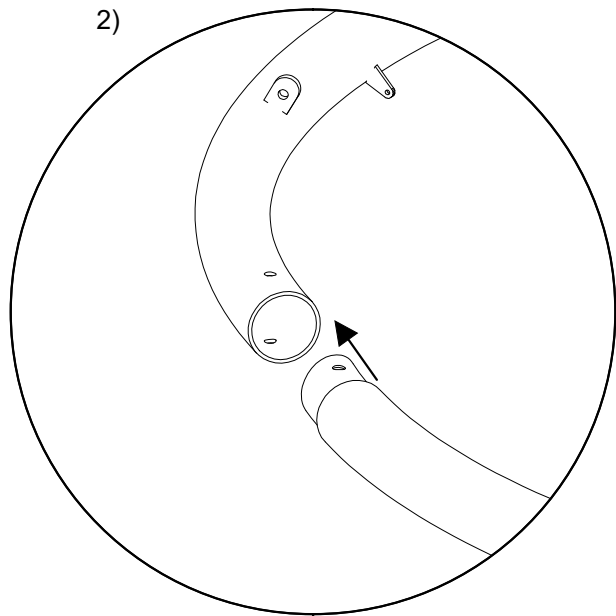
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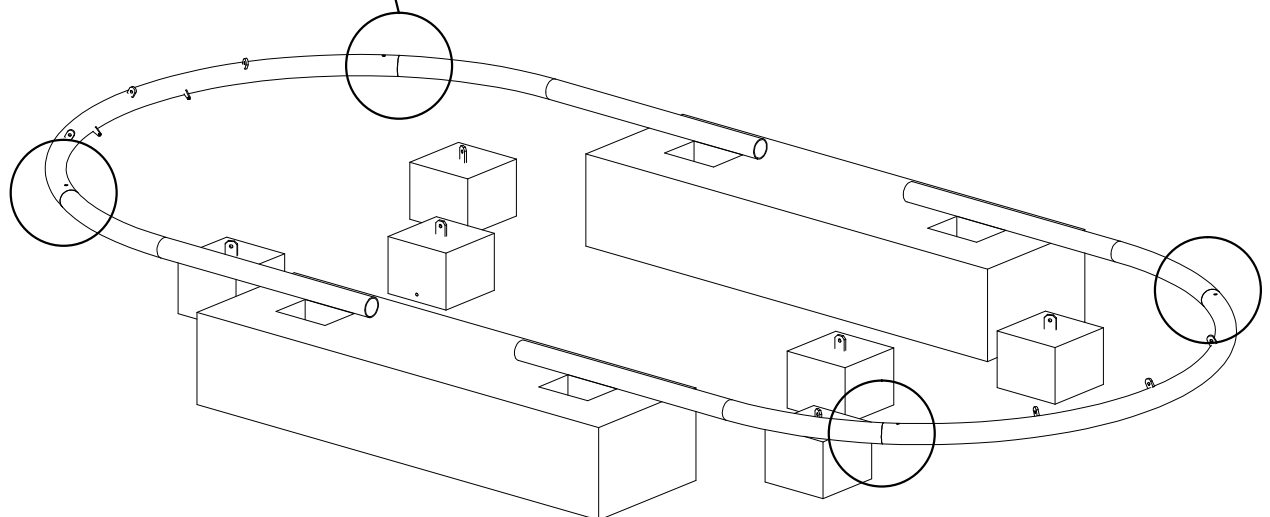
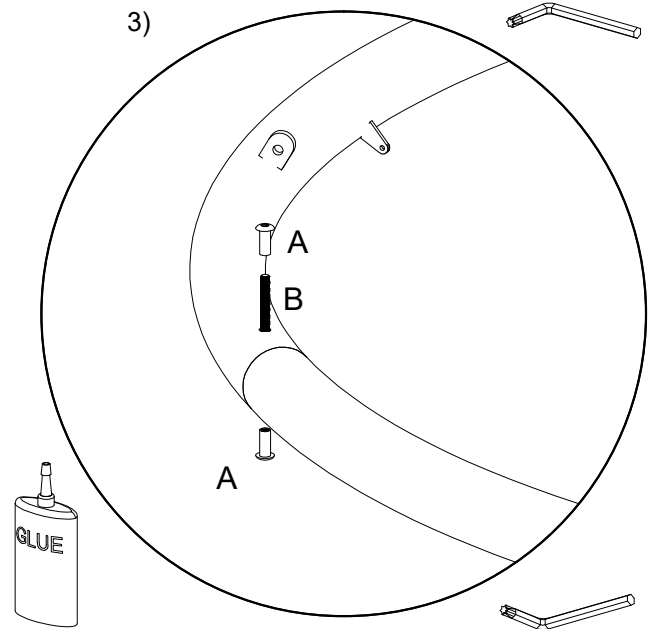
T 25



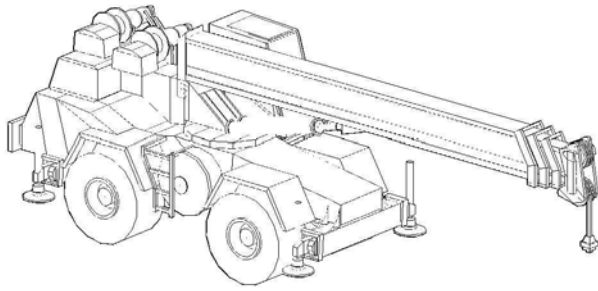
2)



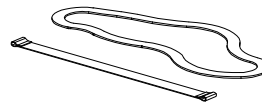
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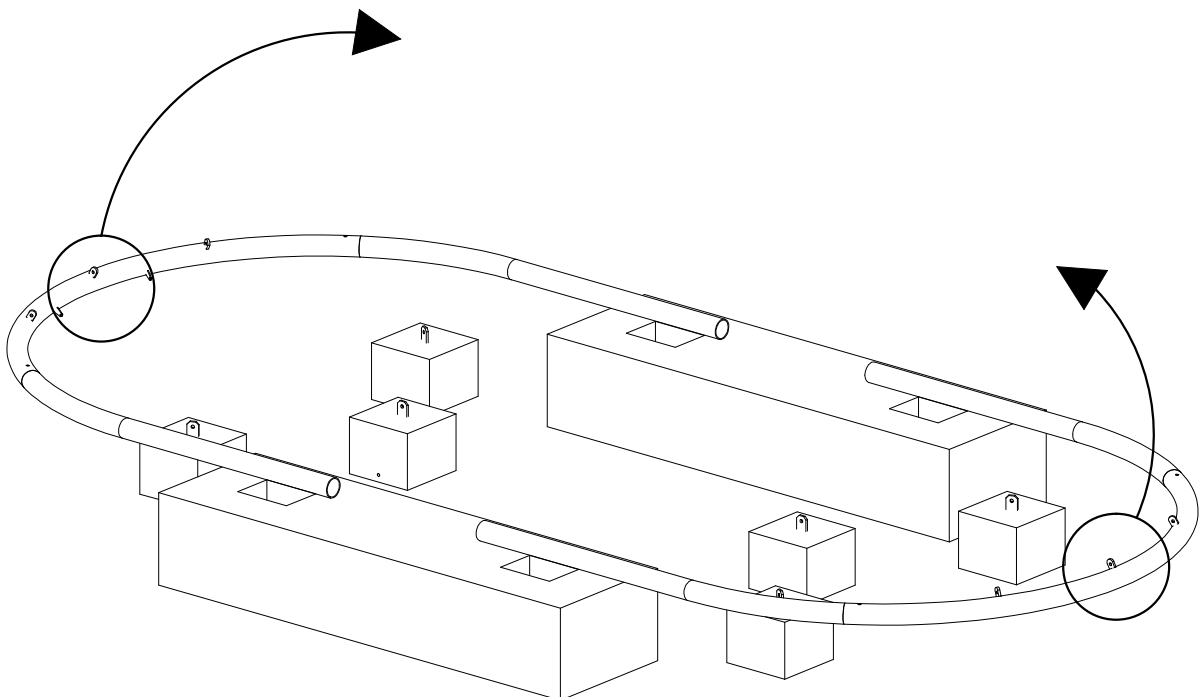
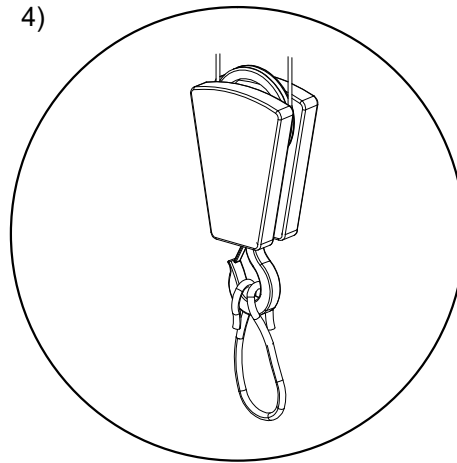
O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg



1x

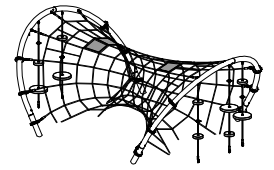


4)

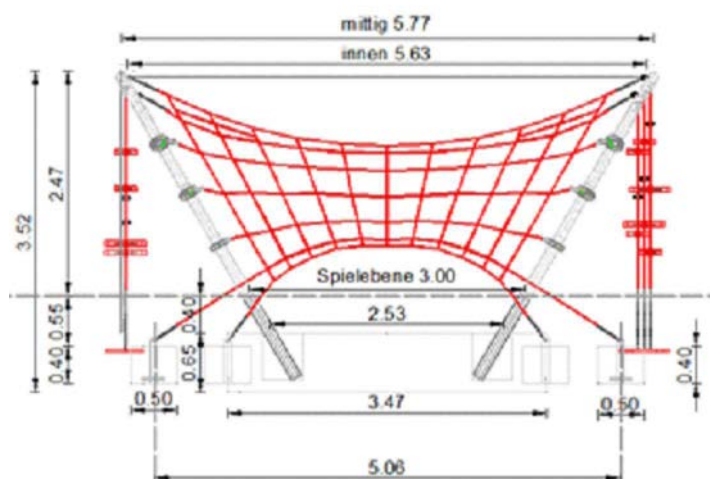
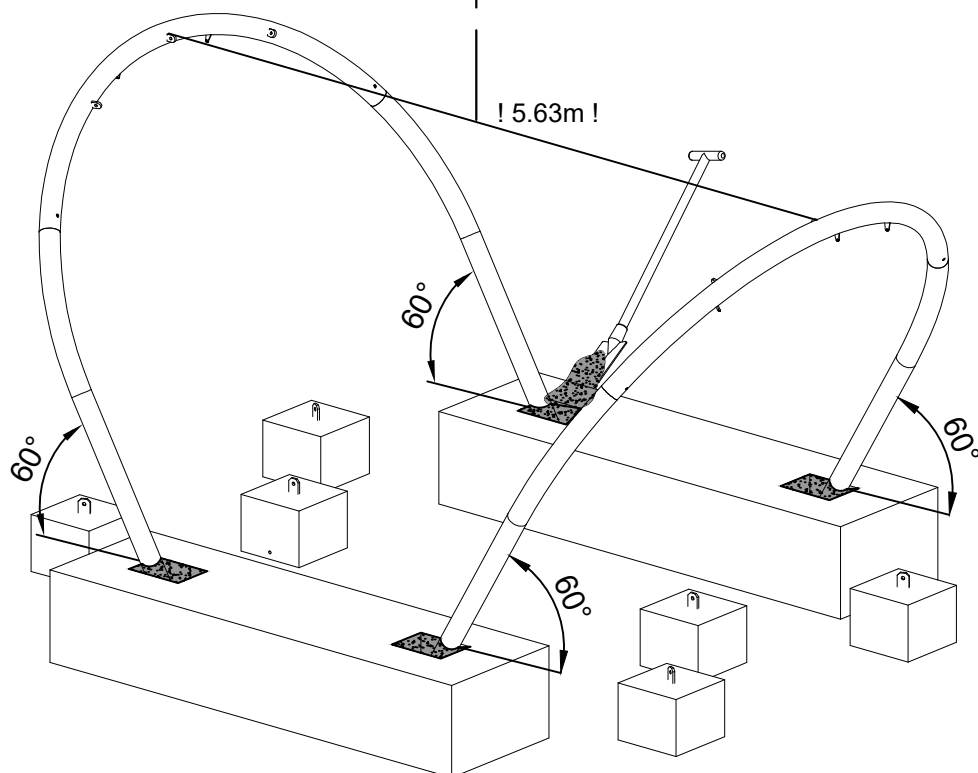


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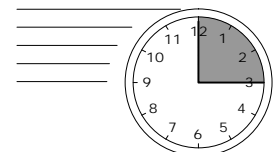
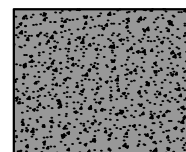
PLAN

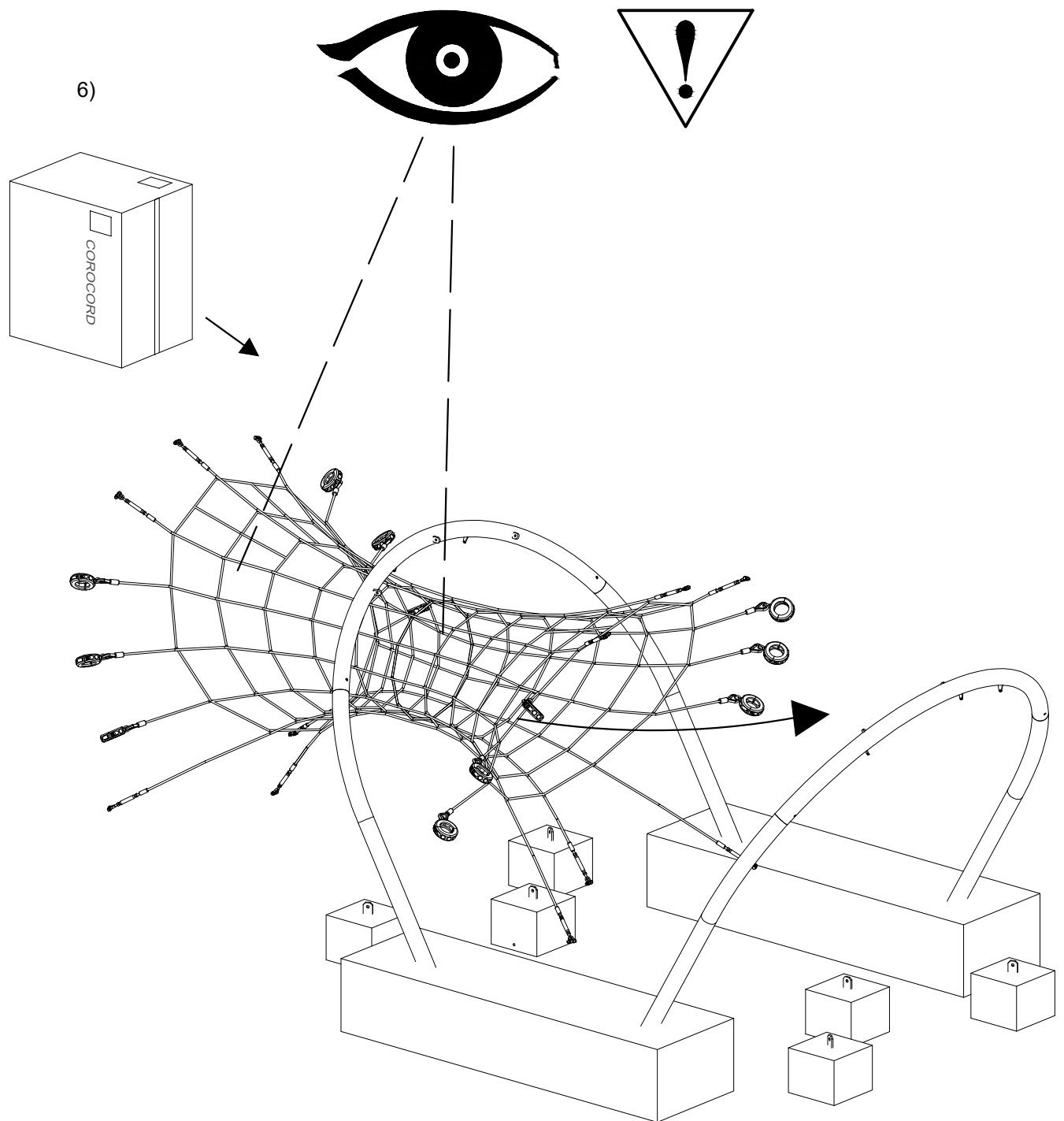


5)

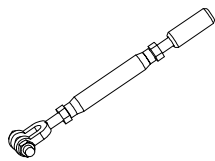


≥ 3 hours





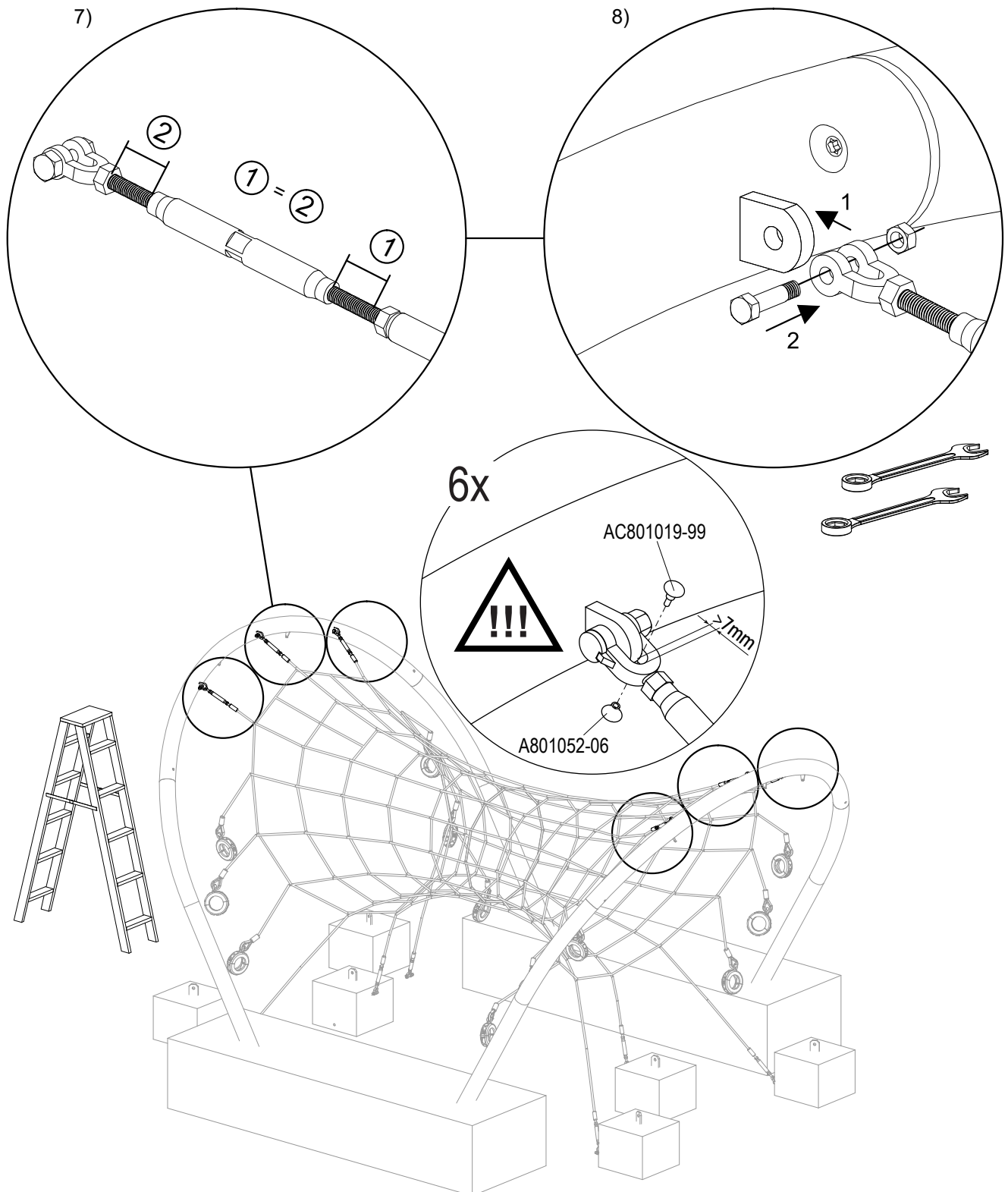
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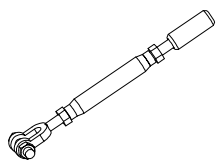
A822006-51 (6x)



30 mm



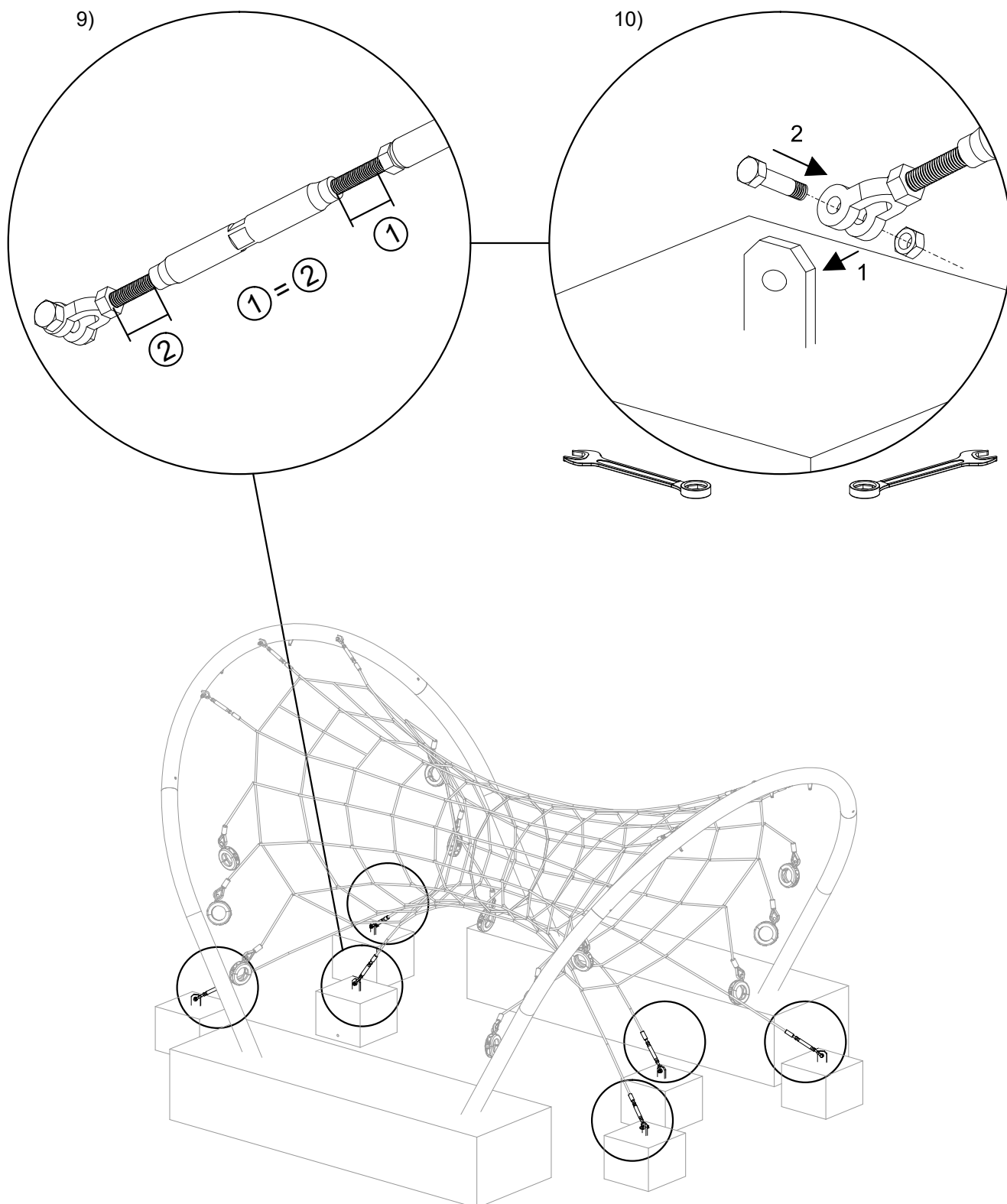
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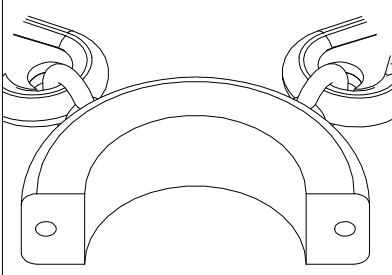
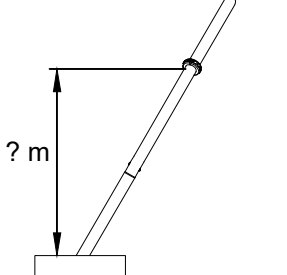
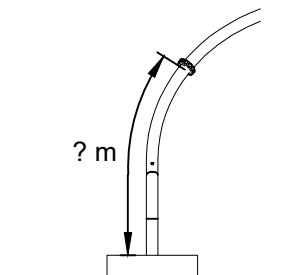
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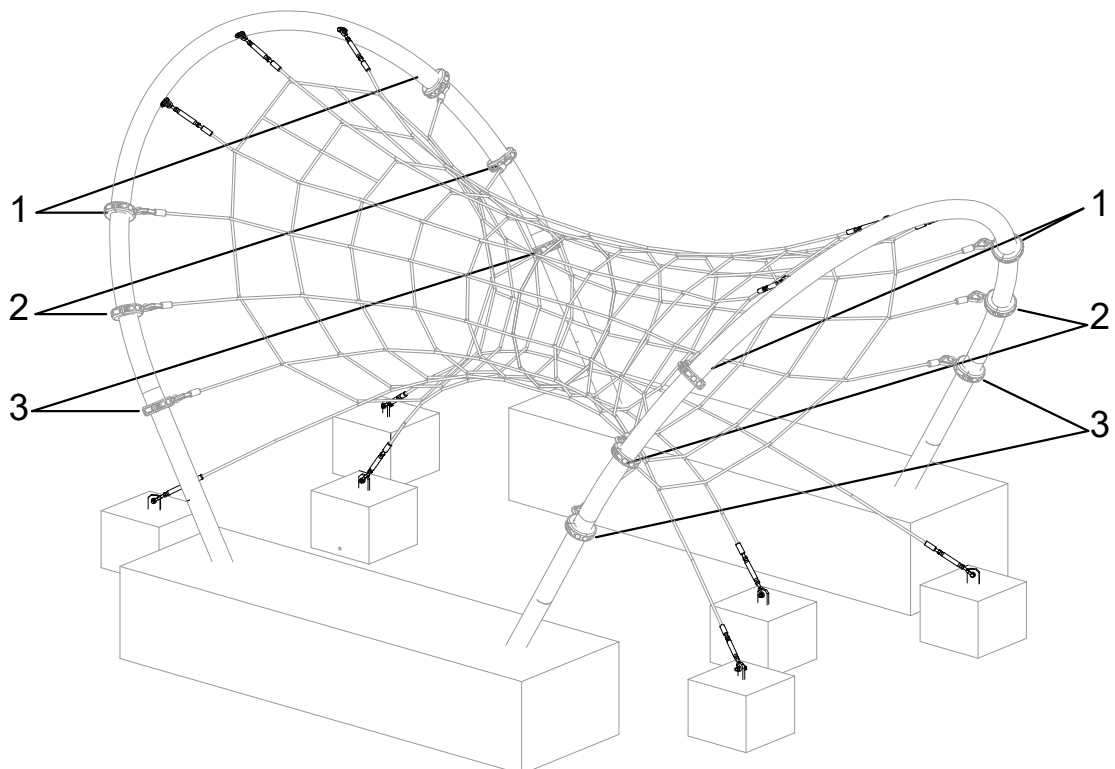
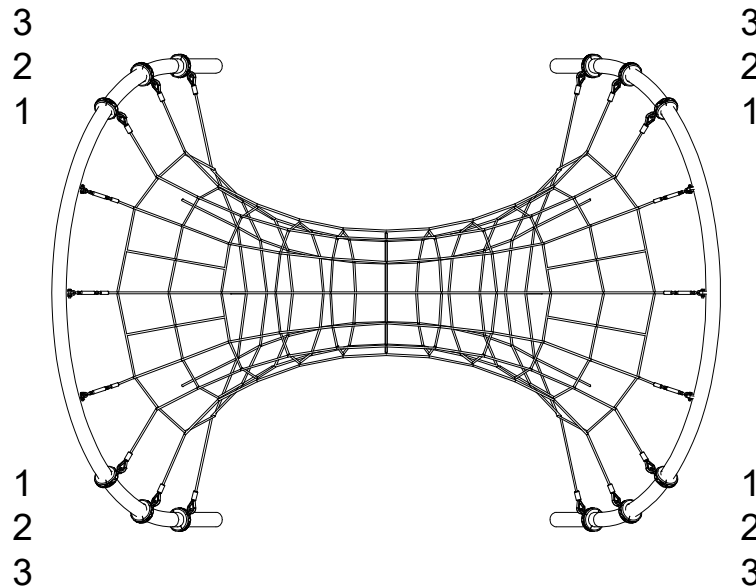


30 mm



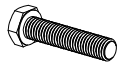
O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg

			
1	2,10	2,50	
2	1,40	1,60	
3	0,70	0,85	



O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg

A



200707412055 (24x)

B



201305013024 (72x)

C



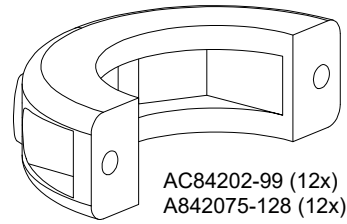
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D

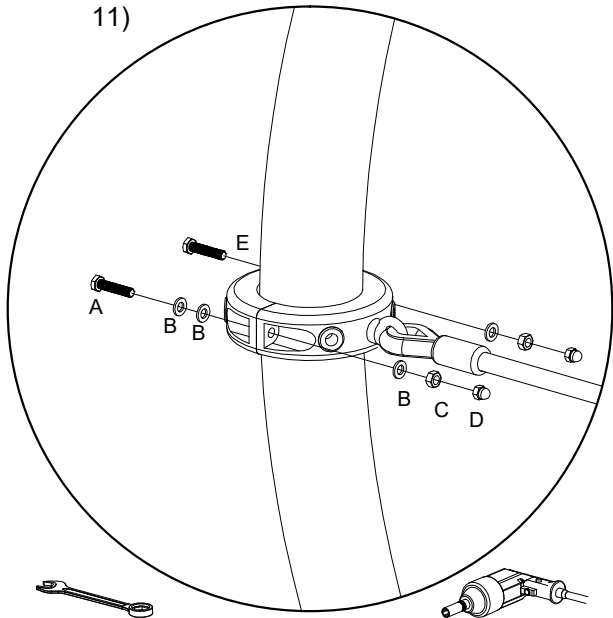


OBV-1912022-A2 (24x)

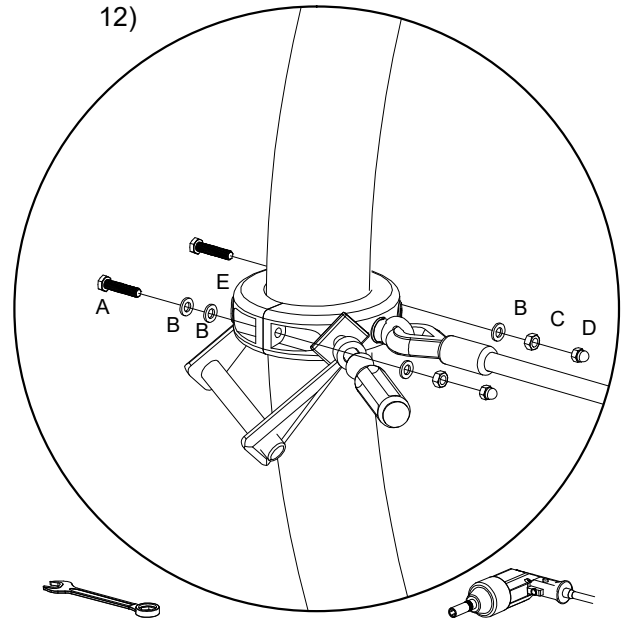
E

AC84202-99 (12x)
A842075-128 (12x)

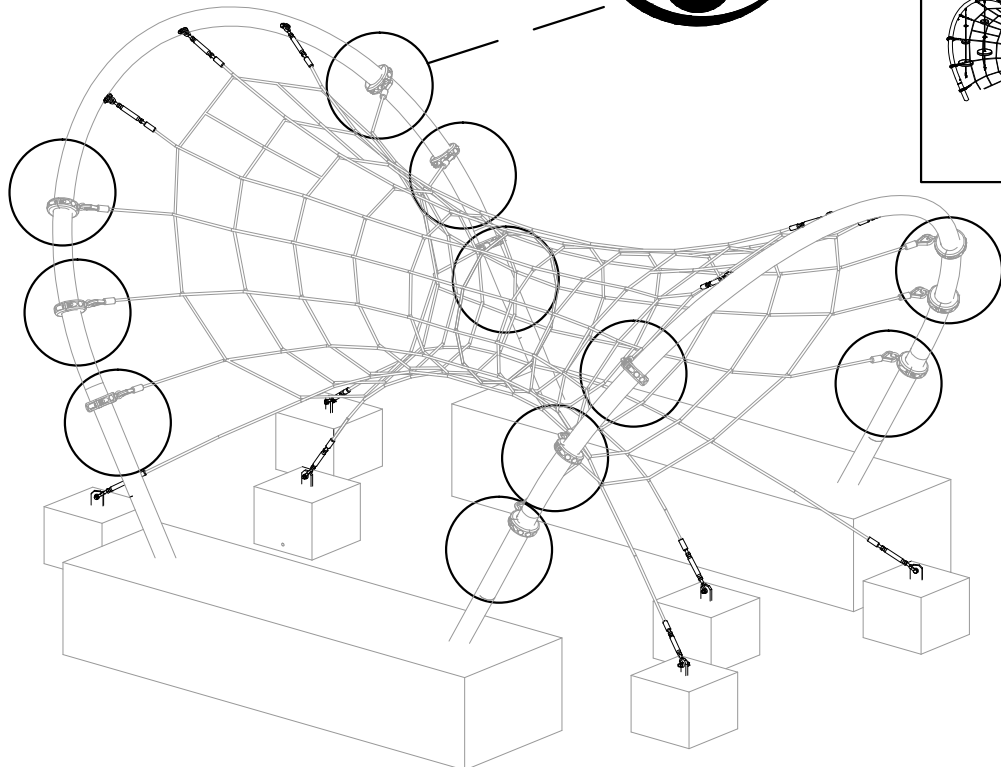
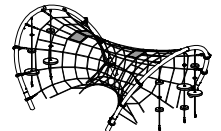
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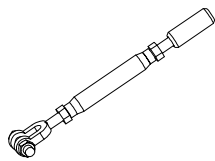
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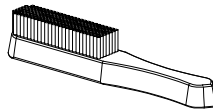
PLAN



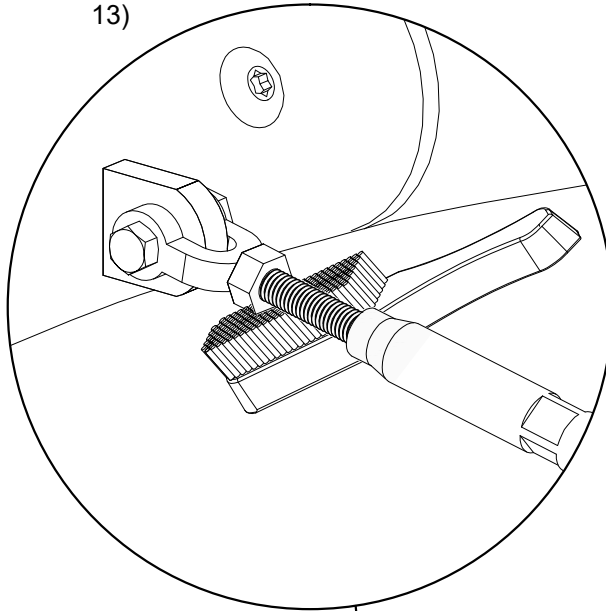
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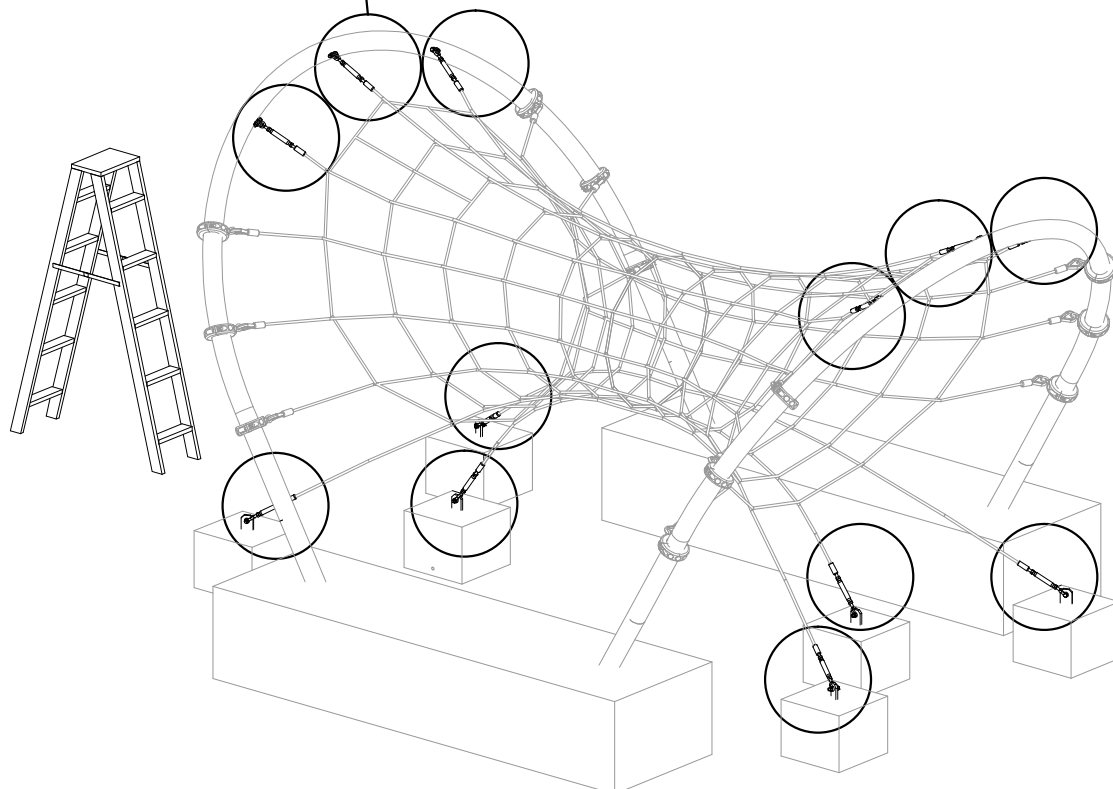
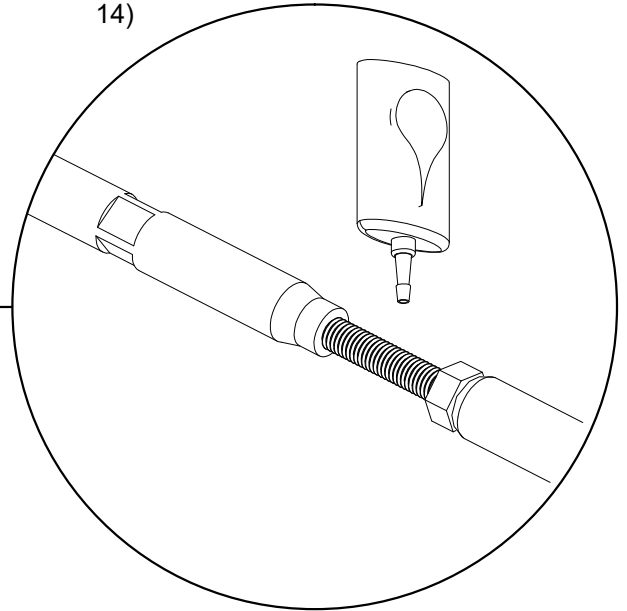
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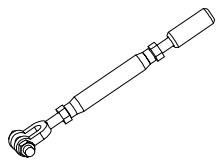
13)



14)



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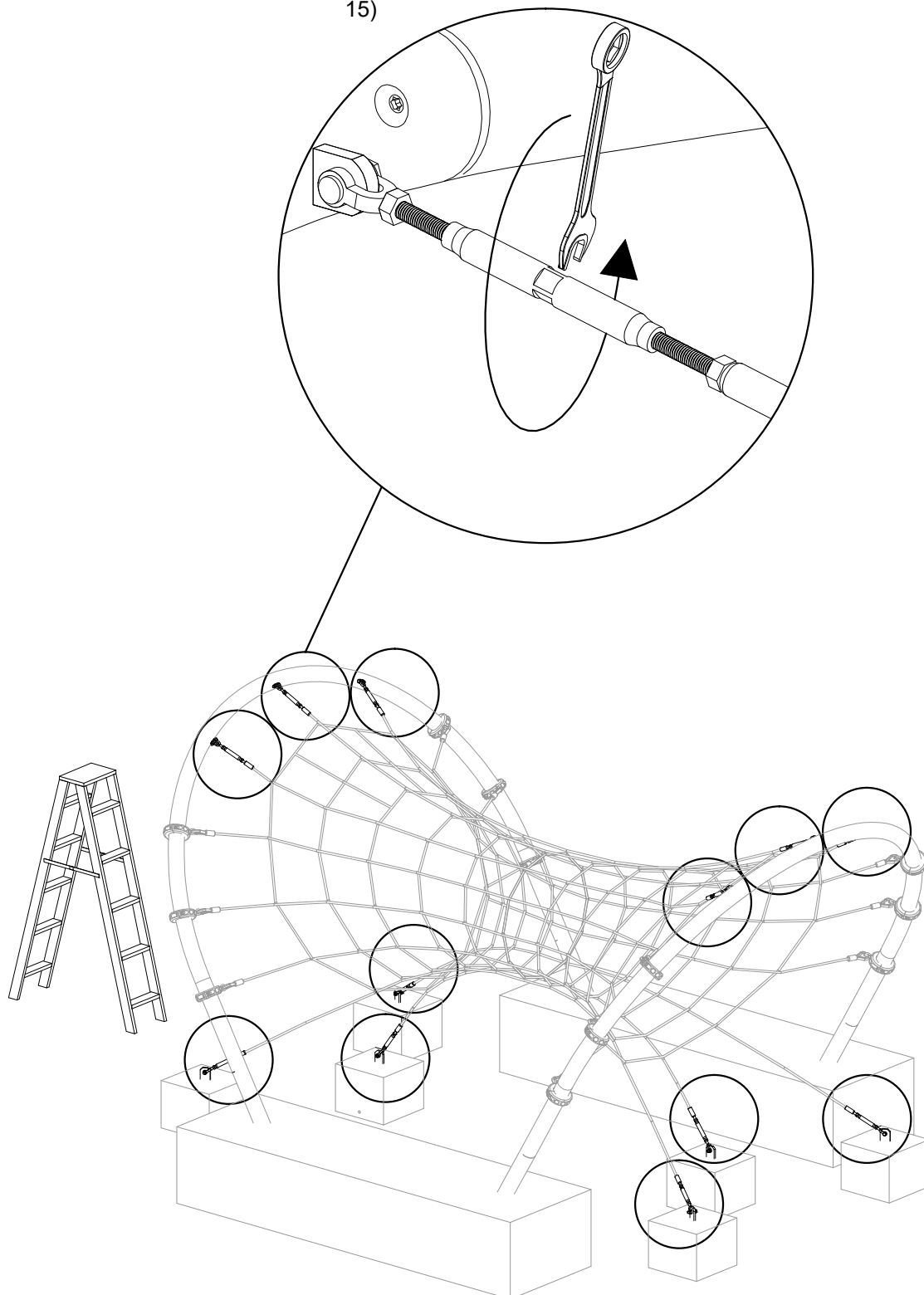


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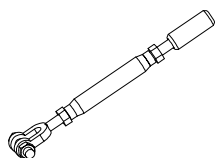


30 mm

15)



O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg

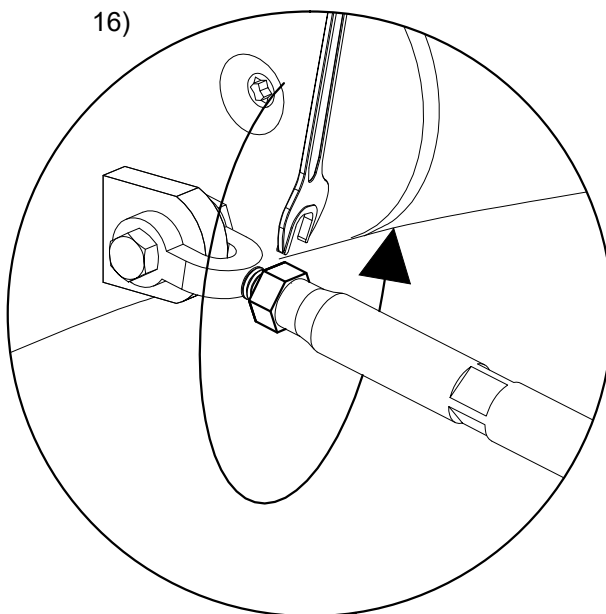


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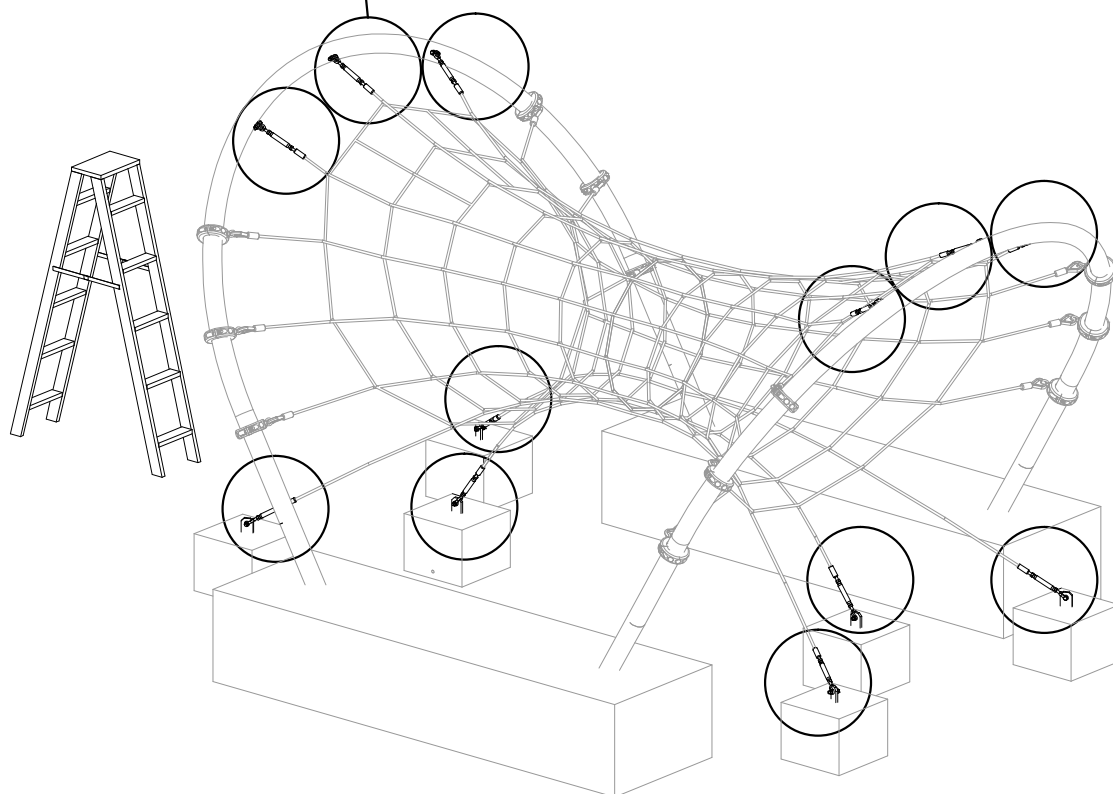
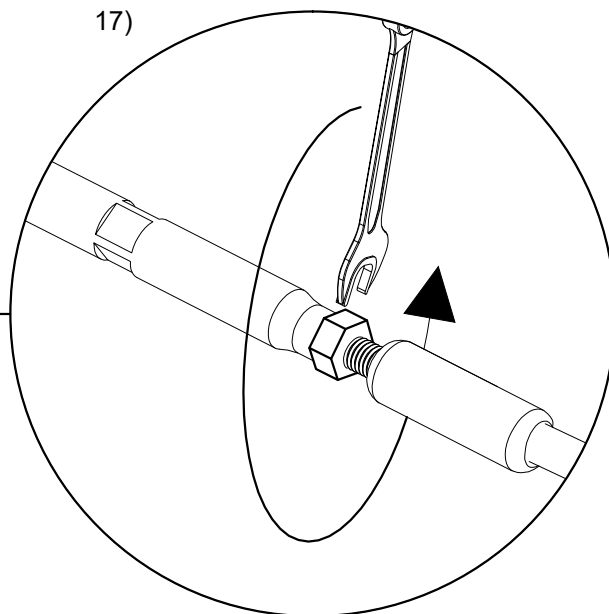


30 mm

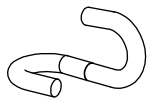
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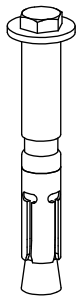
17)



O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg



A842045-52 (5x)



340707912105 (5x)

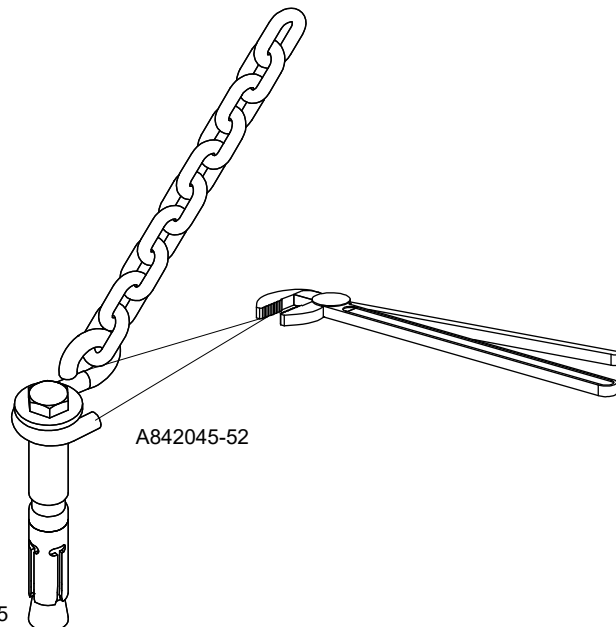
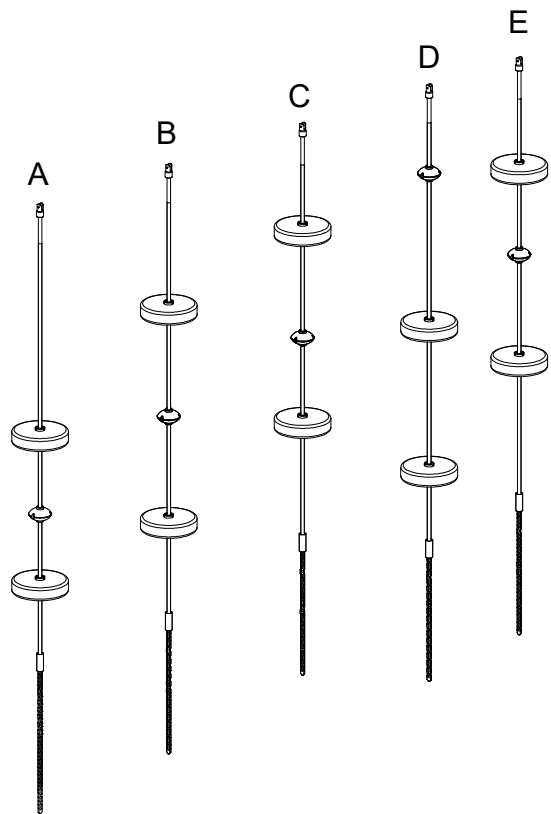
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B - N842002-11

C - N842003-11

D - N842004-11

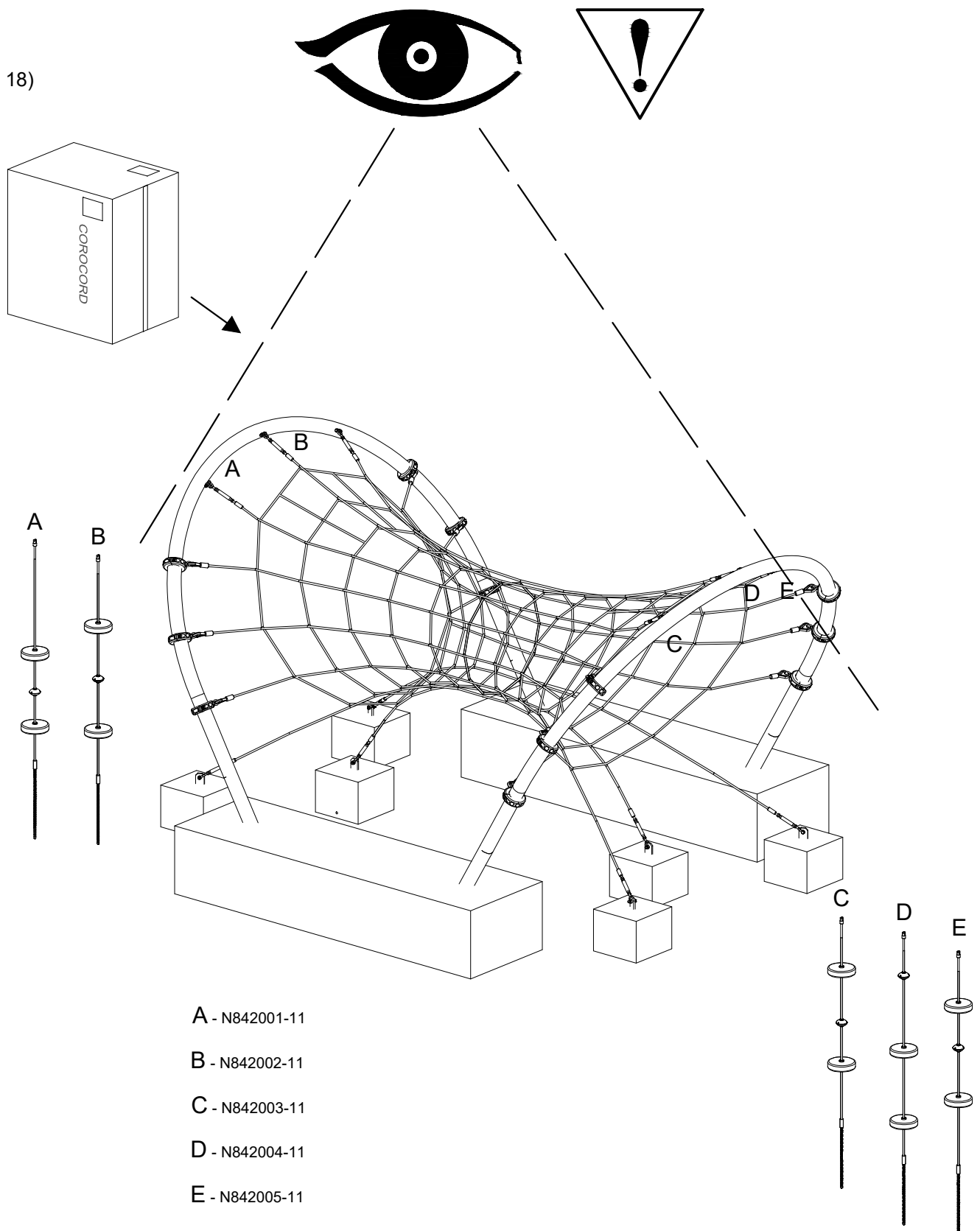
E - N842005-11



A842045-52

340707912105

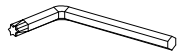
18)



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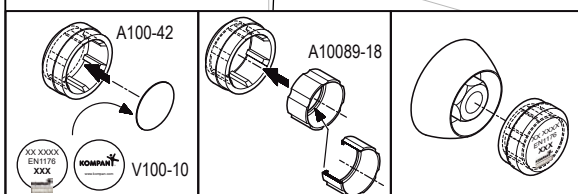
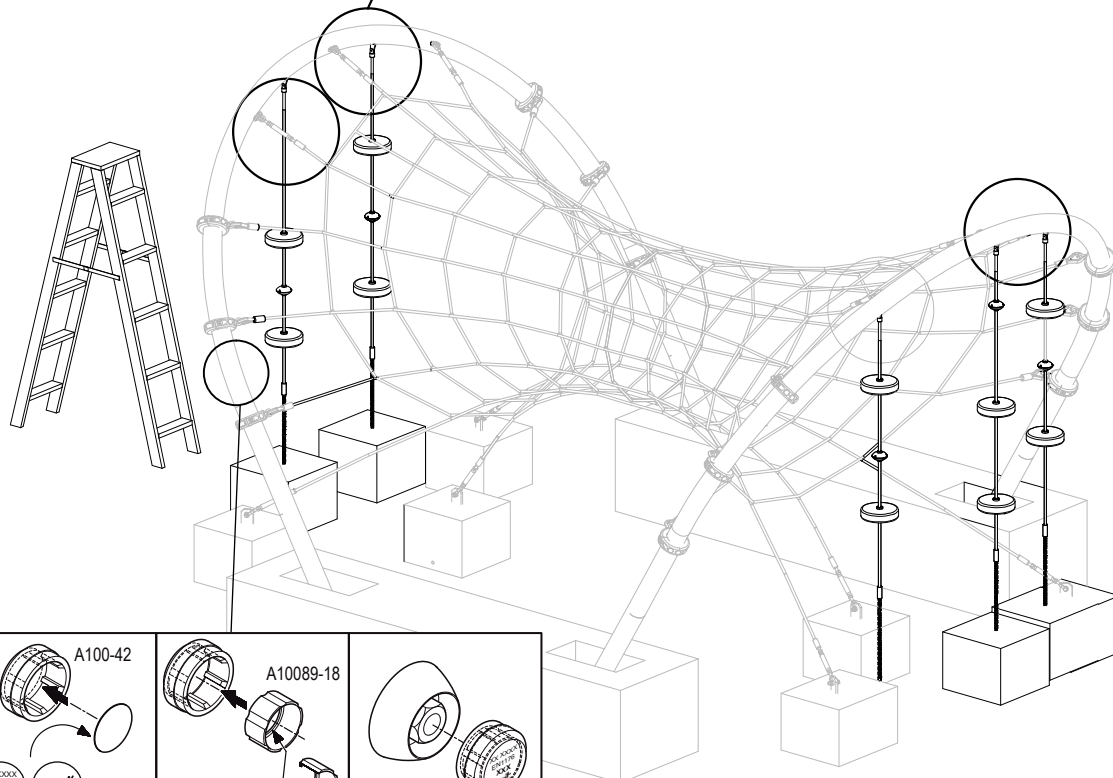
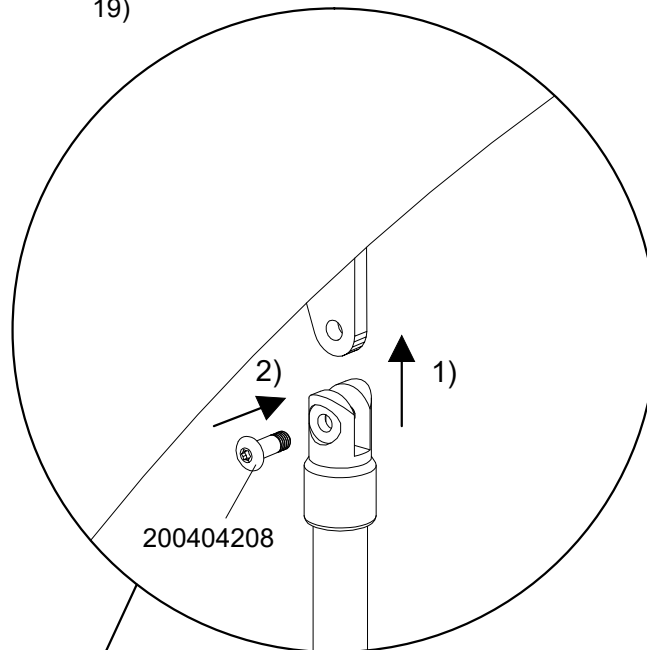


200404208



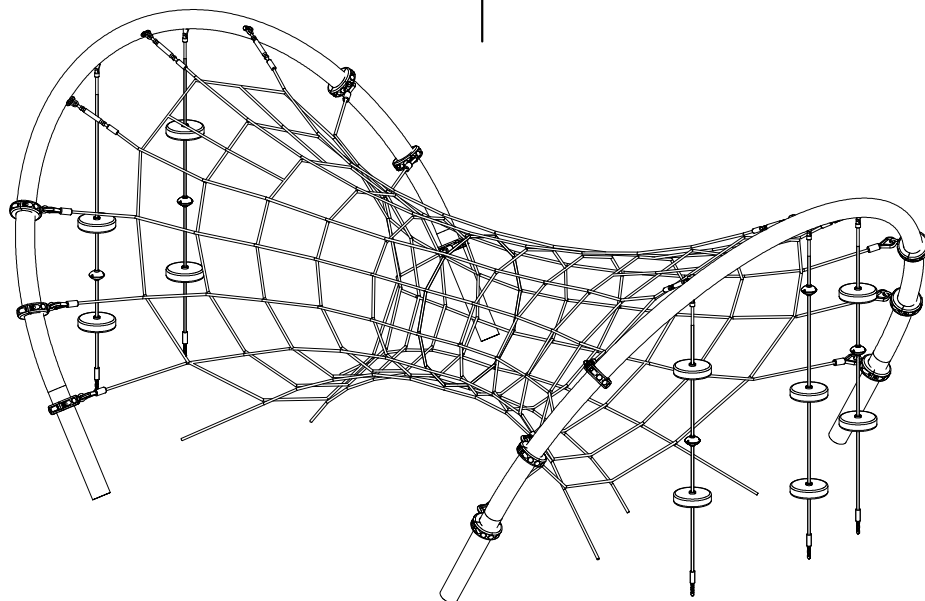
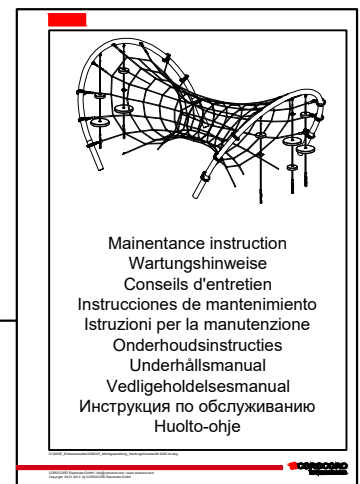
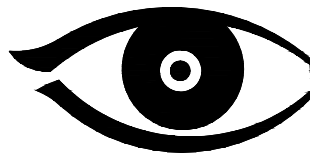
T 25

19)



O:\2000E_Entdeckerwelten\2060\05_Montageanleitung_Wartungshinweise\2060 int.dwg

Please tension the net after 6 months!
 After that no more re-tensioning is required.
 Bitte nach 6 Monaten Gebrauch das Netz spannen!
 Danach ist kein Nachspannen mehr erforderlich.
 Tendre le filet après 6 mois d'utilisation !
 Il ne sera plus nécessaire de retendre ensuite le filet.
 ¡Tensa por favor la red después de 6 meses!
 Después no se tiene que retensar más.
 Si praga di verificare la tensione della rete dopo 6 mesi!
 Dopo di che la tensione non più è richiesto.
 Gelieve het net na 6 maanden na te spannen.
 Na 6 maanden is na spannen niet meer vereist; wel controleren.
 Vänligen efterspänn nätet efter 6 månader!
 Efter att inte mer spänning krävs.
 Venligst efterspænd nettet efter 6 måneder!
 Derefter er yderligere efterspænding unødvendig.
 Проверьте натяжение через 6 месяцев!
 При необходимости отрегулируйте натяжение.
 Uudelleenkiristä verkko 6 kk kuluttua!
 Tämän jälkeen verkkoa ei tarvitse enää kiristää.
 Παρακαλούμε τεντώσετε το δίχτυ μετά από 6 μήνες!
 Μετά από αυτό δεν χρειάζεται να ξανατεντωθεί.



Notes to the foundation plan

The concrete for the foundations must be prepared in accordance with the strength class conforming to German standard C 25/30 (B 25), $f_{ck,cube} = 30 \text{ N / mm}^2$. The concrete must have a flowing consistency. The concrete must be com-

packed during grouting by vibration, tamping, beating or puddling. In the anchor bar area, compacting must be carried out with special care.

The specified setting times must be adhered to.

The concrete for the anchor blocks and the post foundation is to be built into the foundation holes WITHOUT formwork, if there is solid ground.

In case of the anchor blocks having to be produced with formwork, the ground in FRONT of the anchor blocks must be well compressed after the moulding.

The measures centre of equipment to centre anchor bar hole = 1.72 resp. 2.80 m

centre anchor bar hole to centre anchor bar hole = 3.45 resp. 2.38 m

have to be strictly followed, maximum deviation ± 2 cm.

All anchor blocks and the post foundation have to be positioned at the same level. The anchor bars have to be installed vertically and must not stand out more than 10 cm from the foundation. When installing the anchor bars the angle of inclination has to be in exact accordance with the measures given in the foundation plan.

All concrete foundations must be covered with minimum 40 resp. 55 cm of impact attenuating material. The upper edges of the foundations must be well bevelled or rounded off. In no case water may collect on the surfaces of the foundations.

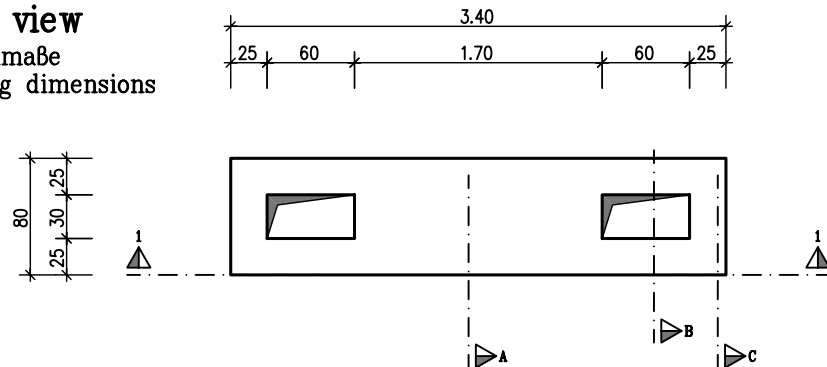
The indicated dimensions for anchor blocks apply only to solid ground of average weight-bearing capacity. In case of new earth fillings and loose ground

- the anchor blocks depths have to be increased to 60 cm.

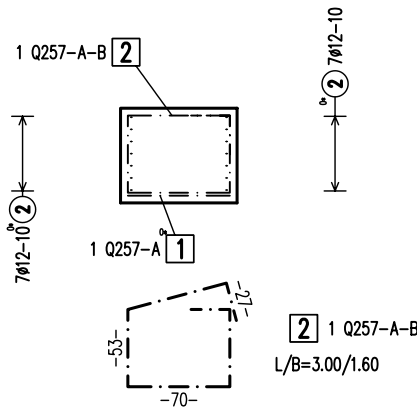
Fundamentbalken b/d=0,80x0,65 - l=3,40m
Foundation beams

Draufsicht
top view

Schalmaße
casing dimensions

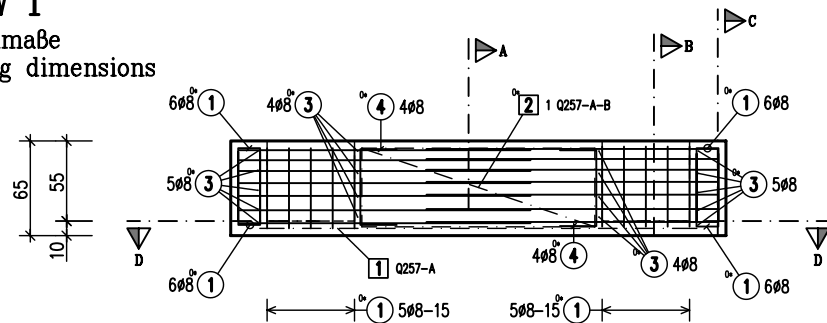


Schnitt A
sektion A

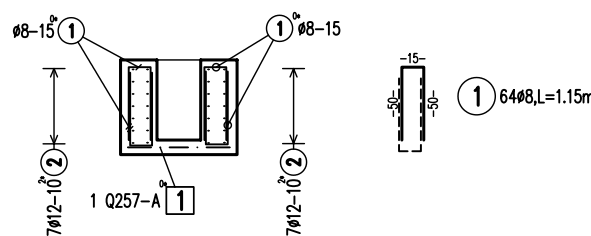


Ansicht 1
view 1

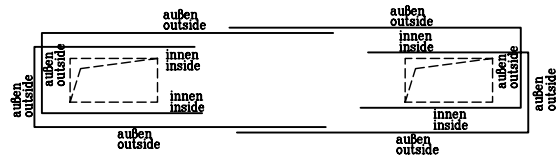
Schalmaße
casing dimensions



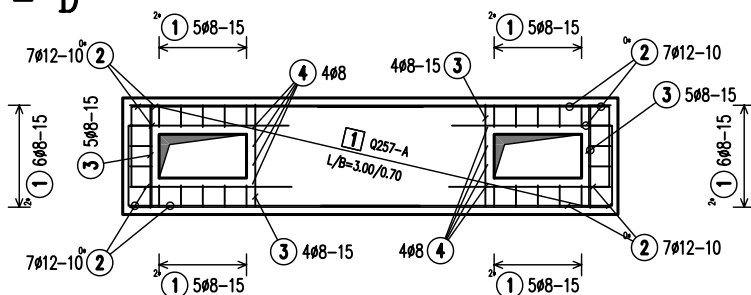
Schnitt B
sektion B



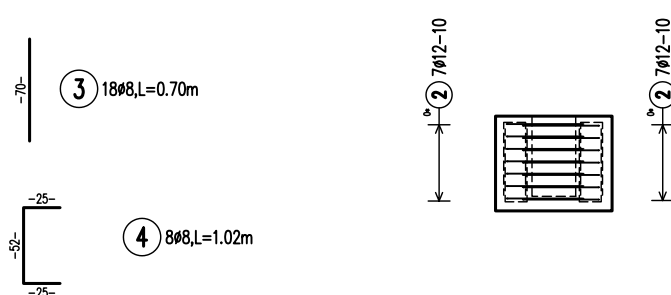
Verlegung Pos. 2
laying Pos. 2



Schnitt D - D
sektion D - D



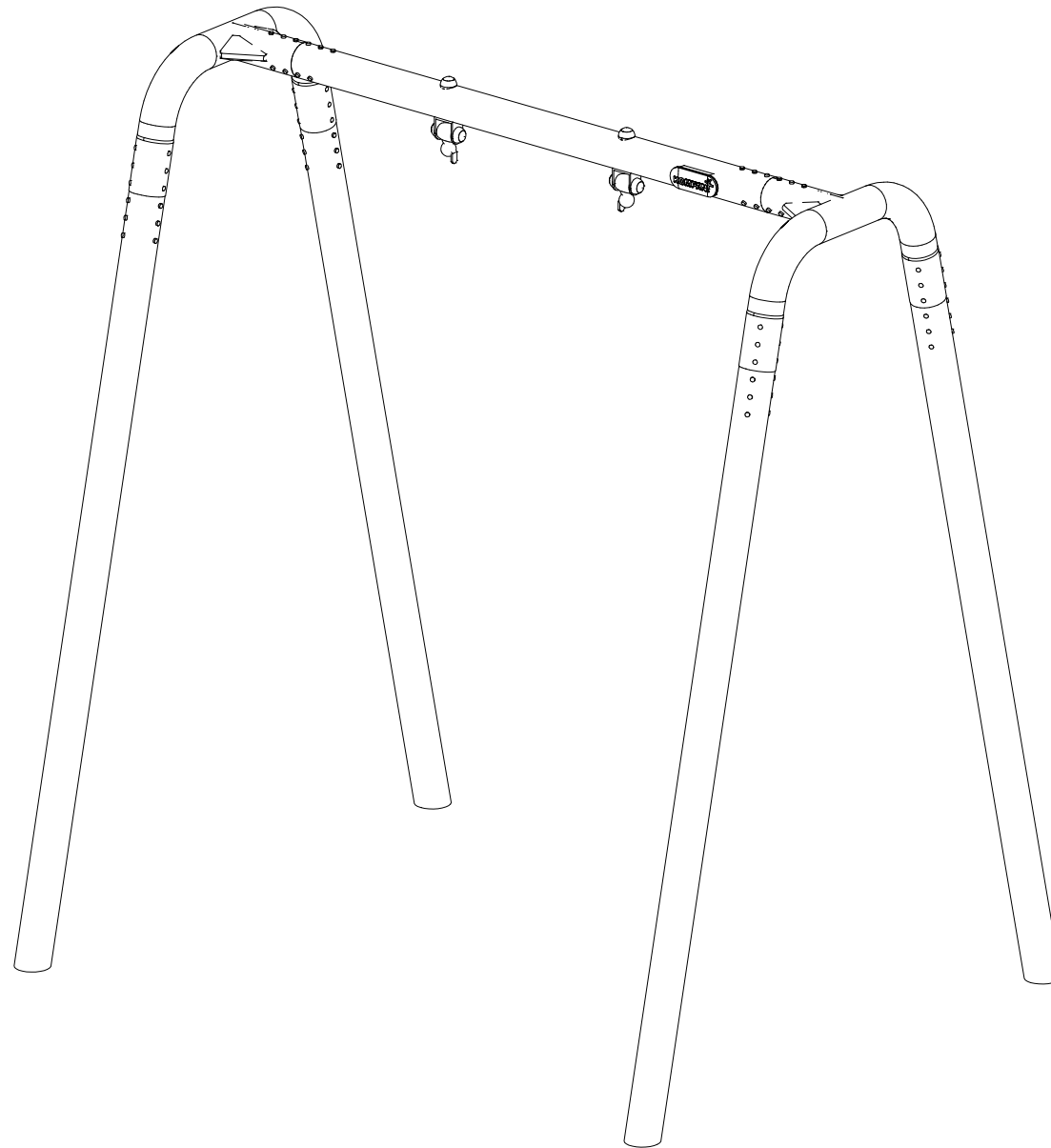
Schnitt C
sektion C



STAHL LISTE Betonstahl: BST 500S					
Pos.	Stk.	d	Länge	D8	D12
1	64	8	1.15	73.60	
2	28	12	3.65		102.20
3	18	8	0.70	12.60	
4	8	8	1.02	8.16	
Gesamtlängen			94.36	102.20	
kg / m			D8 0.395	D12 0.888	
kg / d			37.272	90.754	
Gesamtgewicht (kg)			128.026		

MATTEN LISTE Betonstahl: BST 500M					
Pos.	Stk.	Typ	Länge	Breite	Fläche
1	1	Q257-A	3.00	0.70	2.10
2	1	Q257-A-B	3.00	1.60	4.80
Gesamtstahlmenge					
Typ		Fl(m2)	kg/m2	Gewicht(kg)	
Q257-A		6.90	4.120	28.428	
Gesamtgewicht netto (kg)				28.428	
B = Matte wird um die Querachse gebogen B = Mat is bent around the transverse axis					

Biege- und Verlegeanweisung Bending and displacing instruction		nach DBV-Merkblatt 2002-07 according to DBV-bulletin 2002-07	
			
Stabkrümmungen Bar curvature		Haken Hook Bügel Link	
Stabdurchmesser Bar diameter d _s in mm		Stabdurchmesser Bar diameter d _s in mm	
6, 8, 10, 12 14, 16 20, 25, 28		6, 8, 10, 12 14, 16 20, 25, 28	
min d _{kr} = 150mm min d _{kr} = 240mm min d _{kr} = 375mm		min d _{kr} = 40mm min d _{kr} = 64mm min d _{kr} = 175mm	
Besondere Anforderungen: Particular requirement:			
Betonfestigkeitsklasse: Concrete grade:		Betonstahlsorte: Reinforcing steel:	
C25/30		Bst 500S, Bst 500M	
Alle Maße der Betonstahlauszüge sind Außenmaße ! All dimensions of reinforcement are outer dimensions!			
letzte Stabstahlposition last position of reinforcing bars		letzte Mattenposition last position of reinforcing mats	
4		2	
Betondeckung [mm] Concrete cover [mm]		Expositionsklasse Exposition class	
oben/außen upside/outside		XC4-XF1-WF	
unten/innen downside/inside		XC4-XF1-WF	
seitlich beside		XC4-XF1-WF	
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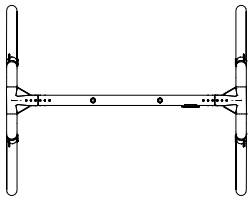


KSW921

ID ----

JIRPET

2021-06-16



Scale: 1:50

Foundation: 90 cm

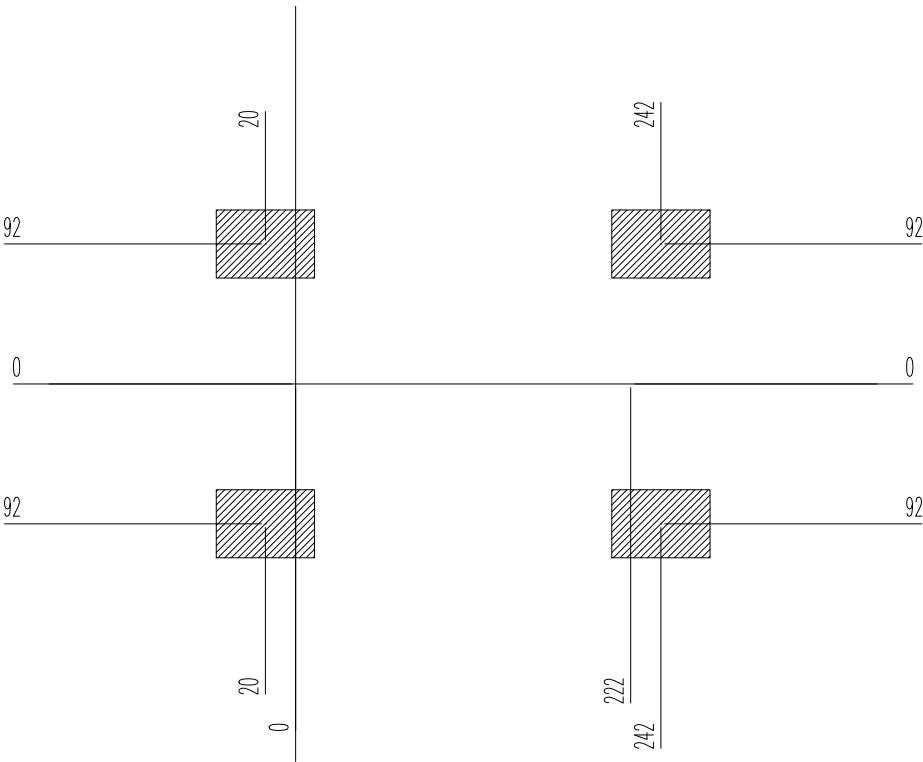
All Unspecified Holes

=

16A

Beton
Betón
Concrete
Hormigón
Béton
Cemento
Betón
Betong

0 m³ 0 cu.ft.

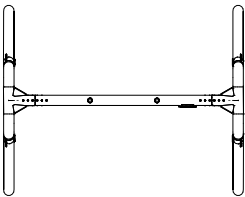


KSW921

ID ----

JIRPET




2021-06-16



Scale: 1/4" = 1'-0"

Foundation: 90 cm

All Unspecified Holes

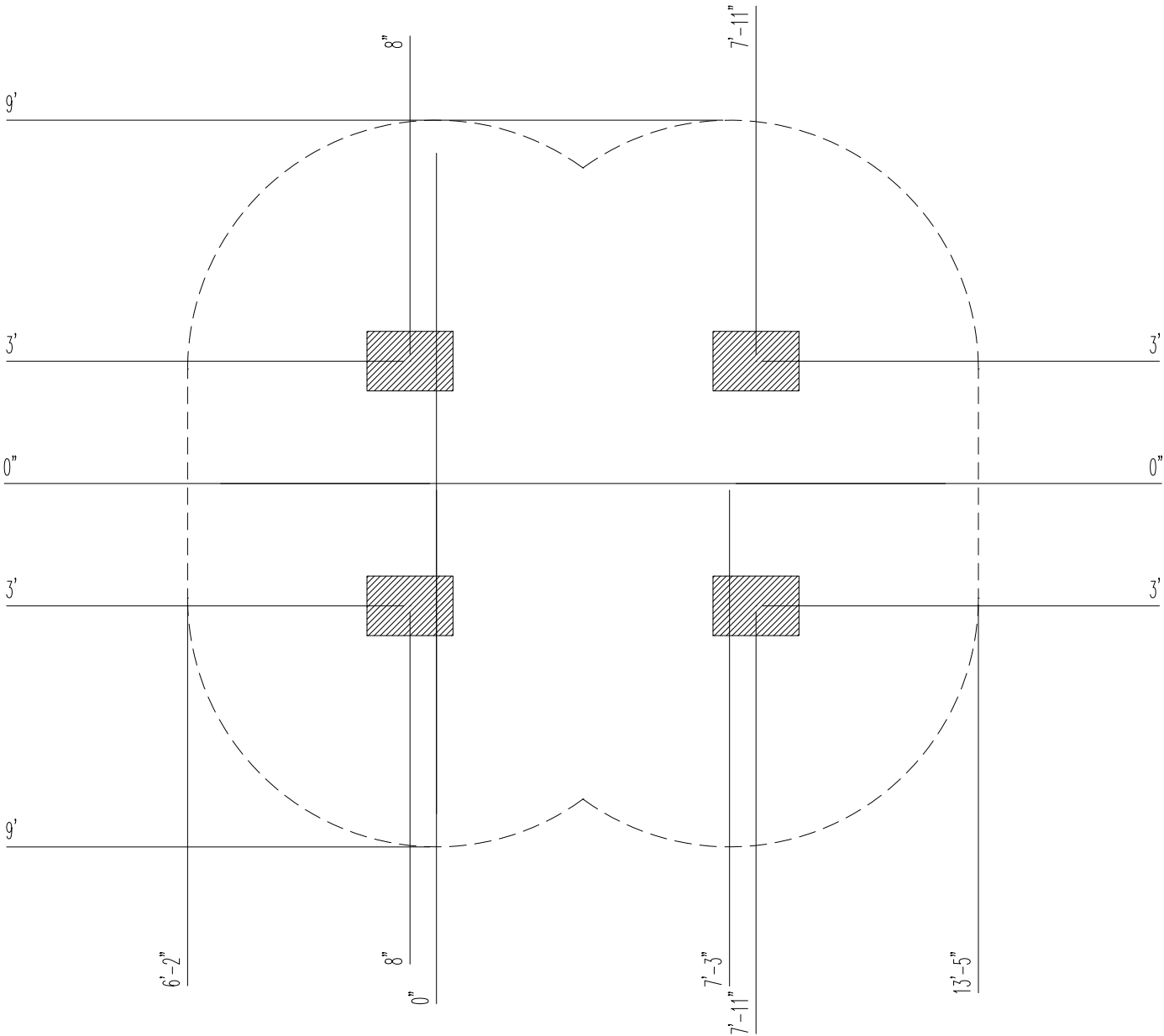
  = 

- Beton
- Beton
- Concrete
- Hormigón
- Béton
- Cemento
- Beton
- Betong

0 m³ 0 cu.ft.

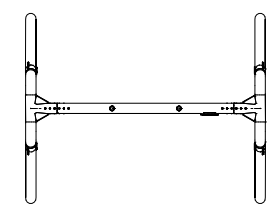
Safety Zone

Perimeter: 66 ft
Area: 315,4 ft²








KSW921
ID ----
JIRPET
2021-06-16



Scale: 1:50

Foundation: 90 cm

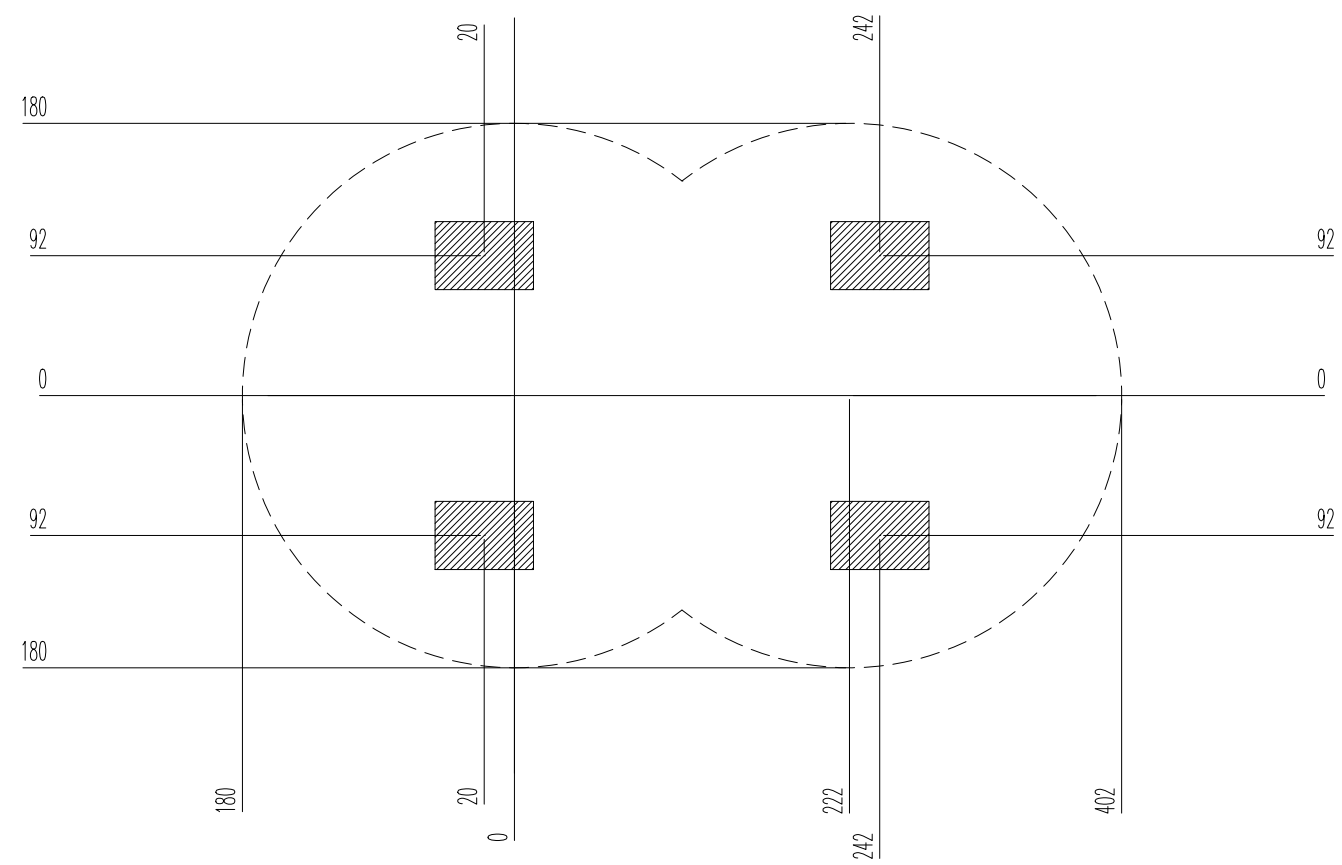
All Unspecified Holes

  = 

Beton
Betón
Concrete
Hormigón
Béton
Cemento
Betón
Betong

0 m³ 0 cu.ft.

Safety Zone
Perimeter: 17 m
Area: 17,7 m²



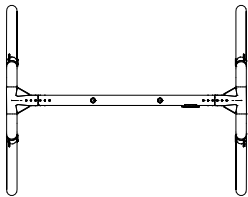


KSW921

ID ----

JIRPET

2021-06-16



Scale: 1:50

Foundation: 90 cm

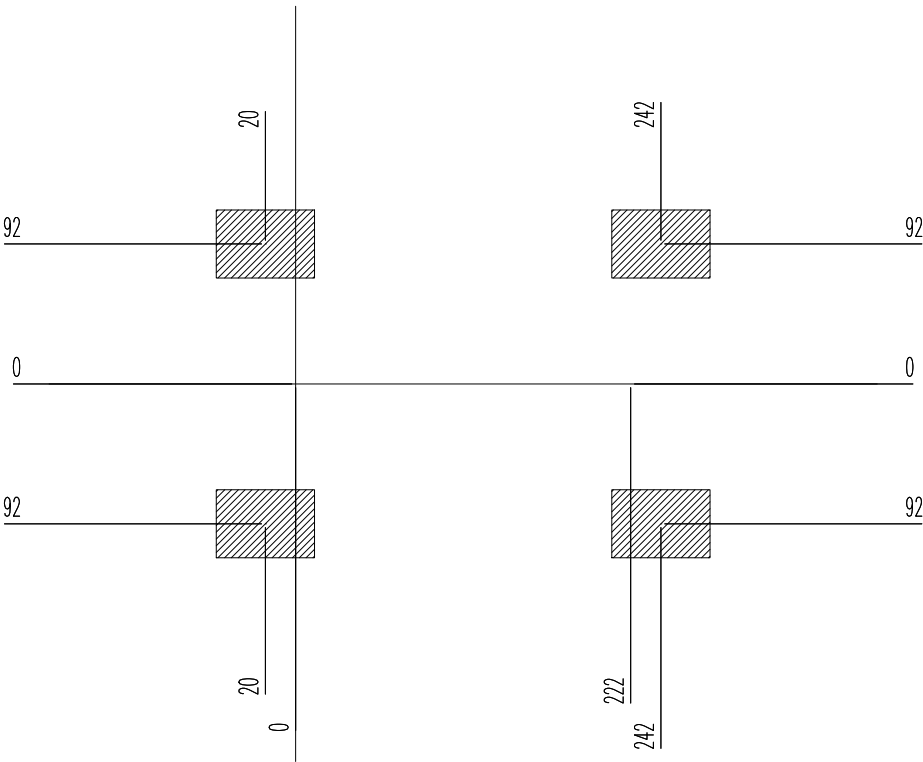
All Unspecified Holes

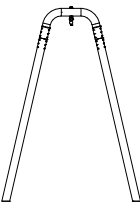
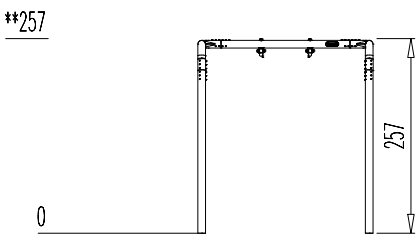
=

16A

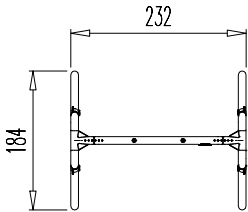
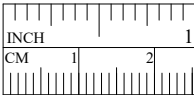
Beton
Betón
Concrete
Hormigón
Béton
Cemento
Betón
Betong

0 m³ 0 cu.ft.





Scale: 1:100



ASTM

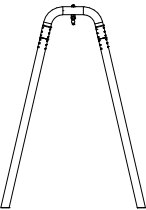
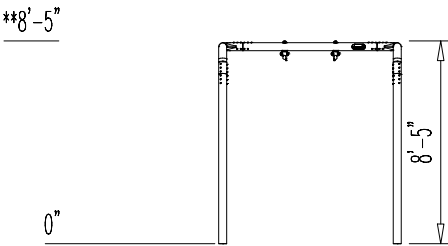


KSW921

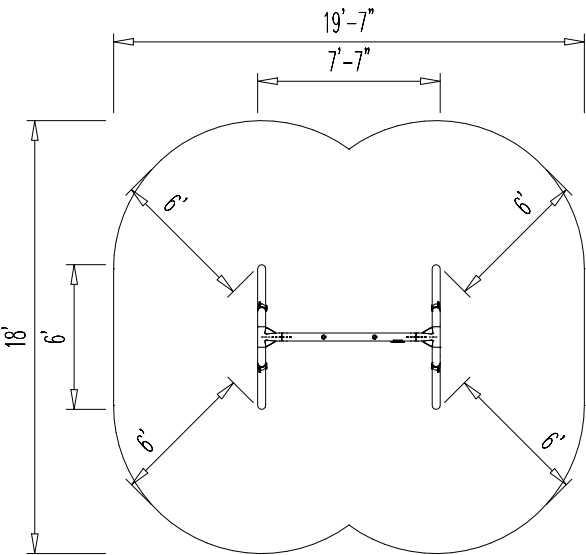
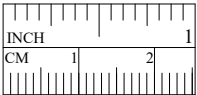
ID ----

JIRPET

2021-06-16



Scale: 1/8" = 1'-0"



CSA Z614

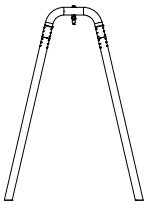
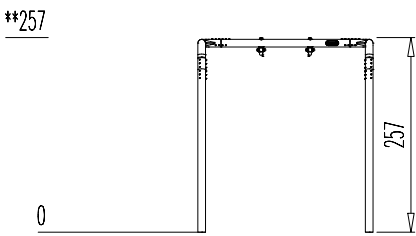


KSW921

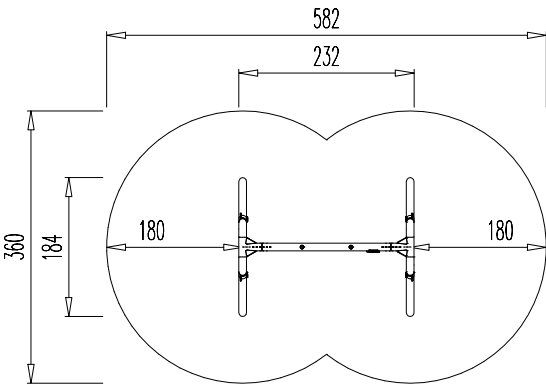
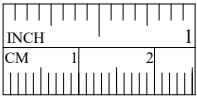
ID ----

JIRPET

2021-06-16



Scale: 1:100



AS4685

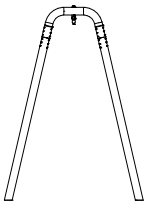
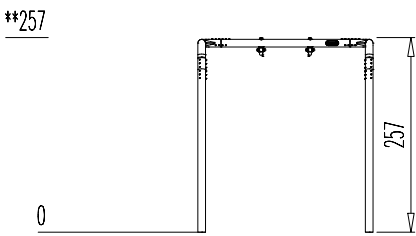


KSW921

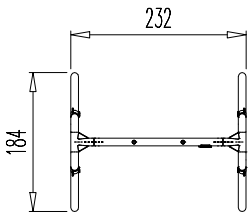
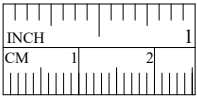
ID ----

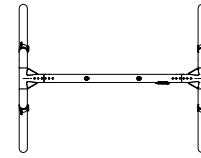
JIRPET

2021-06-16



Scale: 1:100





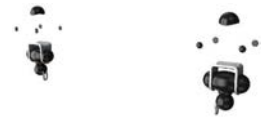
SW903-00



2x SW952006-05

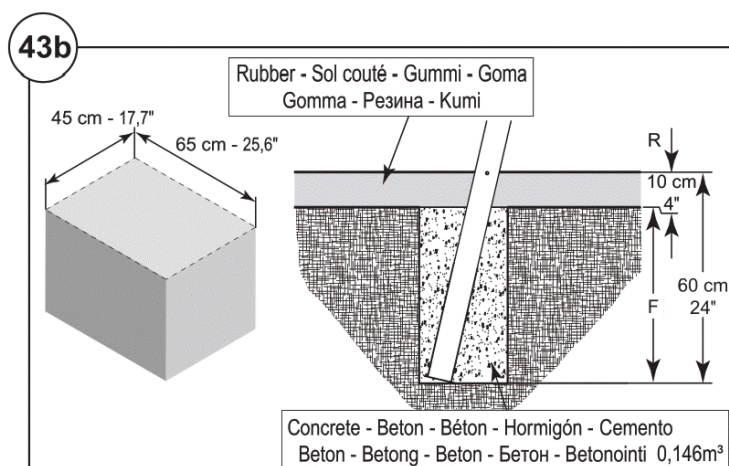
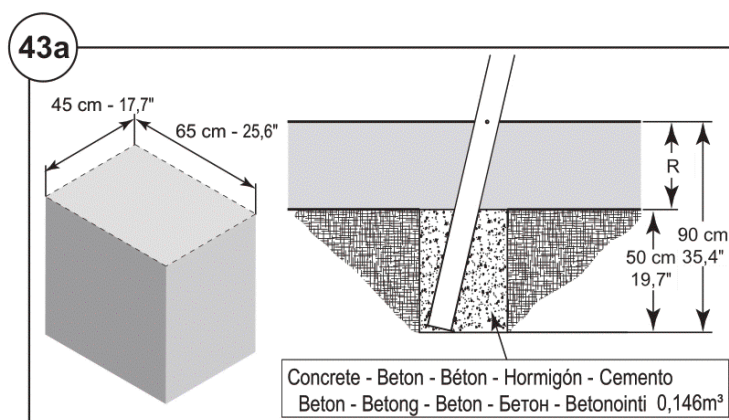
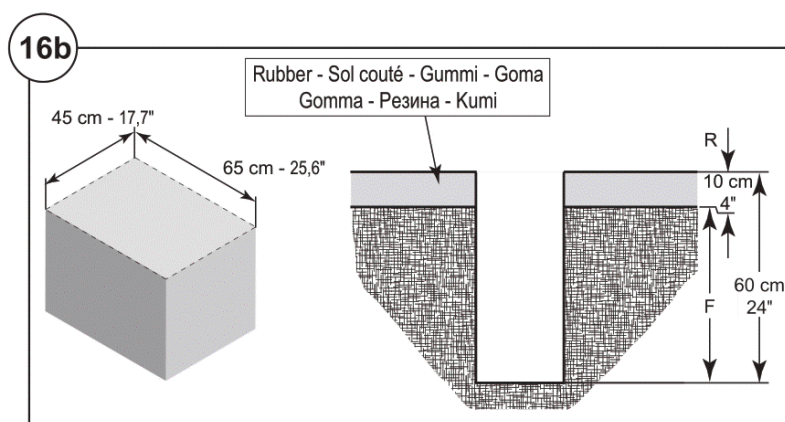
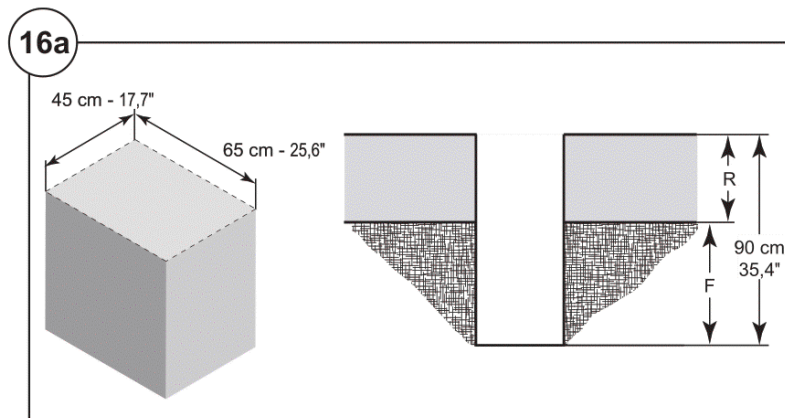


SW951032-01



SW950001-02

V00113 Portal swings



Important! The concrete must be sufficiently hardened before the play item may be used.

Wichtig! Vor der Inbetriebnahme des Spielräräts muß der Beton ausreichend abge bunden haben.

Important! Le béton doit avoir suffisamment durci avant de mettre en service l'équipement de jeux.

Importante! El hormigón debe estar suficientemente endurecido antes de comenzar a utilizar el equipo de juego.

Importante! Prima de utilizzare le attrezzature da gioco, il cemento deve essere sufficientemente solidificato.

Belangrijk! Het beton moet voldoende gehard zijn voordat het speeltoestel in gebruik wordt genomen.

Viktigt! Betongen måste ha härdat tillräckligt innan lekredskapet börjar användas.

Viktigt! Betonen skal være tilstrækkeligt hær det, før legeredskabet tages i brug.

Важно! Перед использованием сооружений убедитесь, что бетон затвердел.

HUOM! Betonivalun on oltava tarpeeksi kuiva, ennen kuin leikkivälinettä saa käyttää.

R: Resilient surfacing - Fallschutzbelag - Revêtement amortissant
Recubrimiento amortiguador - Materiale ammortizzante
Veiligheidsondergrond - Fallunderlag - Faldunderlag
Безопасное покрытие - Turva-alusta

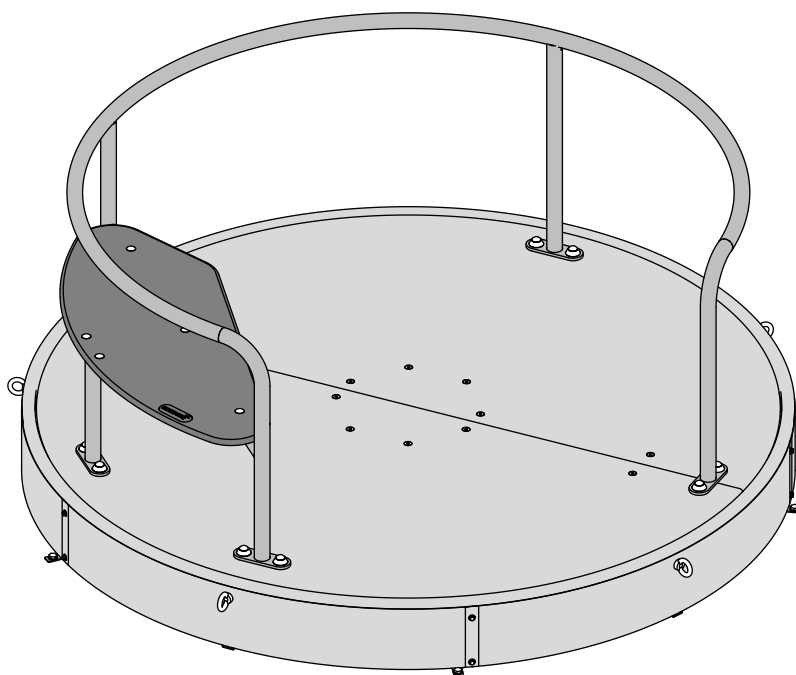
F: Foundation - Fundament - Fondement - Fondazione
Fundamento - Fonden - Stiftelsen - Perustus - Stichting - Фонд



PCM157-0201 PCM157-0204

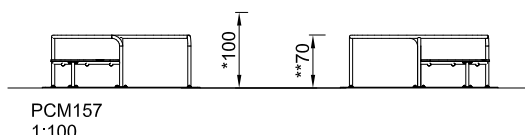
PCM157-0202 PCM157-0205

PCM157-0203 PCM157-0206



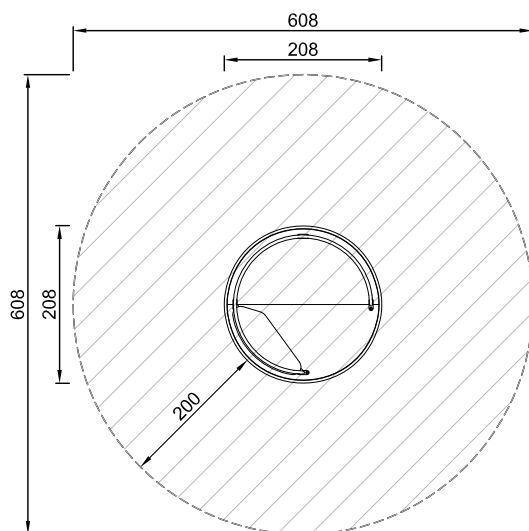


Safety zone in accordance with EN 1176
Sicherheitsabstand gemäß EN 1176
Espace d'évolution selon EN 1176
Zona de seguridad según EN 1176
Área de segurança de acordo com a EN1176
Distanze di sicurezza in conformità con lo standard EN 1176
Veiligheidsgebied in overeenstemming met EN 1176
Säkerhetsområde enl EN 1176
Sikkerhedsareal iht. EN 1176
Зона безопасности в соответствии с EN 1176
EN1176-normin mukainen turva-alue



* Free height of fall
Freie Fallhöhe
Hauteur de chute libre
Altura de caída libre
Altura de queda livre
Altezza di caduta libera
Vrije valhoogte
Fri fallhöjd
Fri faldhøjde
Высота свободного падения
Vapaa putoamiskorkeus

All measurements are in cm
Alle Maßangaben in cm
Toutes les dimensions sont indiquées en cm
Todas las medidas están indicadas en cm
Todas as medidas estão em cm
Tutte le misure sono in cm
Alle afmetingen zijn in cm
Alla mått är angivna i cm
Alle mål er angivet i cm
Все измерения в см.
Kaikki ohjeissa mainitut mitat ovat senttimetrejä.



PCM157
*100cm
**70cm
***29m²
1:100

Please note: The safety zone shown on this drawing is in accordance with EN 1176. There may be some locations where a larger safety zone is required. If in doubt, please contact your play consultant.

Achtung: Der angegebene Sicherheitsabstand entspricht EN 1176. Bestimmte Länder schreiben größere Sicherheitsabstände vor. Bitte wenden Sie sich in Zweifelsfällen an Ihren Berater.

Attention : l'espace d'évolution montré est conforme à EN 1176. Dans certains pays, un espace d'évolution plus grand peut être exigé. Prière de contacter notre conseiller en cas de doute.

Observe: La zona de seguridad demostrada en este dibujo cumple con EN 1176. En algunos sitios puede ser necesaria una zona de seguridad más grande. En caso de tener alguna duda, por favor póngase en contacto con nuestro consultor.

Nota: A área de segurança ilustrada neste desenho está de acordo com a EN1176. Podem existir alguns territórios onde seja exigida uma área de segurança maior. Na dúvida, por favor contacte o seu consultor local da KOMPAN.

Attenzione: la distanza di sicurezza specificata è conforme ai requisiti EN 1176. In alcuni paesi, le norme locali possono richiedere distanze di sicurezza maggiori. In caso di dubbi, contattare il nostro consulente.

N.B.: het getoonde veiligheidsgebied is in overeenstemming met EN 1176. In sommige landen kan een groter veiligheidsgebied vereist zijn. In geval van twijfel onze adviseur raadplegen.

Obs: Det markerade säkerhetsområdet följer EN 1176. I vissa länder kan det finnas krav på större säkerhetsområde. Kontakta vänligen vår konsulent om du är osäker.

Obs.: Det viste sikkerhedsareal er i overensstemmelse med EN 1176. I nogle lande kan der være krav om større sikkerhedsareal. Kontakt venligst vores konsulent ved tvivlsspørgsmål.

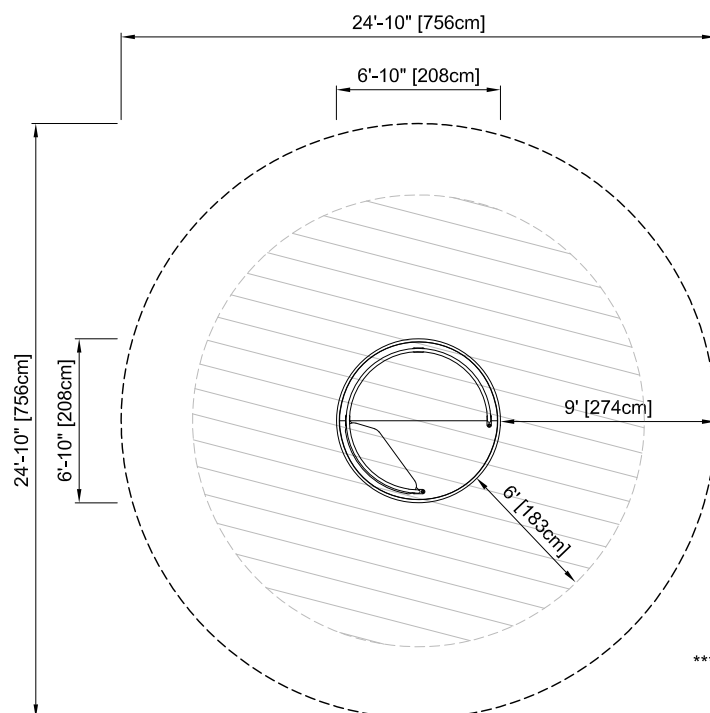
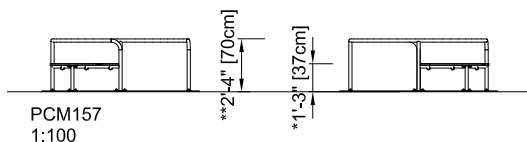
Внимание: Зона безопасности указана в соответствии с EN 1176. Возможны случаи, когда требуется увеличение зоны безопасности. В затруднительных случаях обращайтесь к Вашему консультанту.

Huom: Tämän piirustuksen turva-alue on EN1176-normin mukainen. Joissain sijoituspaikoissa saatetaan edellyttää suurempaa turva-aluetta. Jos olet epävarma, otathan yhteyttä KOMPANIin.

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Safety zone in accordance with ASTM 1487/CSA Z614
Sicherheitsabstand gemäß ASTM 1487/CSA Z614
Espace d'évolution selon ASTM 1487/CSA Z614
Zona de seguridad según ASTM 1487/CSA Z614
Distanze di sicurezza in conformità con lo standard ASTM 1487/CSA Z614
Veiligheidsgebied in overeenstemming met ASTM 1487/CSA Z614
Säkerhetsområde enl ASTM 1487/CSA Z614
Sikkerhedsareal iht. ASTM 1487/CSA Z614
Зона безопасности в соответствии с ASTM 1487/CSA Z614
ASTM 1487/CSA Z614-normin mukainen turva-alue



* Free height of fall
Freie Fallhöhe
Hauteur de chute libre
Altura de caída libre
Altezza di caduta libera
Vrije valhoogte
Fri fallhöjd
Fri faldhøjde
Высота свободного падения
Vapaa putoamiskorkeus

Please note: The safety zone shown on this drawing is in accordance with ASTM 1487/CSA Z614. There may be some locations where a larger safety zone is required. If in doubt, please contact your play consultant.

Achtung: Der angegebene Sicherheitsabstand entspricht ASTM 1487/CSA Z614. Bestimmte Länder schreiben größere Sicherheitsabstände vor. Bitte wenden Sie sich in Zweifelsfällen an Ihren Berater.

Attention : l'espace d'évolution montré est conforme à ASTM 1487/CSA Z614. Dans certains pays, un espace d'évolution plus grand peut être exigé. Prière de contacter notre conseiller en cas de doute.

Observe: La zona de seguridad demostrada en este dibujo cumple con ASTM 1487/CSA Z614. En algunos sitios puede ser necesaria una zona de seguridad más grande. En caso de tener alguna duda, por favor póngase en contacto con nuestro consultor.

Attenzione: la distanza di sicurezza specificata è conforme ai requisiti ASTM 1487/CSA Z614. In alcuni paesi, le norme locali possono richiedere distanze di sicurezza maggiori. In caso di dubbi, contattare il nostro consulente.

N.B.: het getoonde veiligheidsgebied is in overeenstemming met ASTM 1487/CSA Z614. In sommige landen kan een groter veiligheidsgebied vereist zijn. In geval van twijfel onze adviseur raadplegen.

Obs: Det markerade säkerhetsområdet följer ASTM 1487/CSA Z614. I vissa länder kan det finnas krav på större säkerhetsområde. Kontakta vänligen vår konsulent om du är osäker.

Obs.: Det viste sikkerhedsareal er i overensstemmelse med ASTM 1487/CSA Z614. I nogle lande kan der være krav om større sikkerhedsareal. Kontakt venligst vores konsulent ved tvivlsspørgsmål.

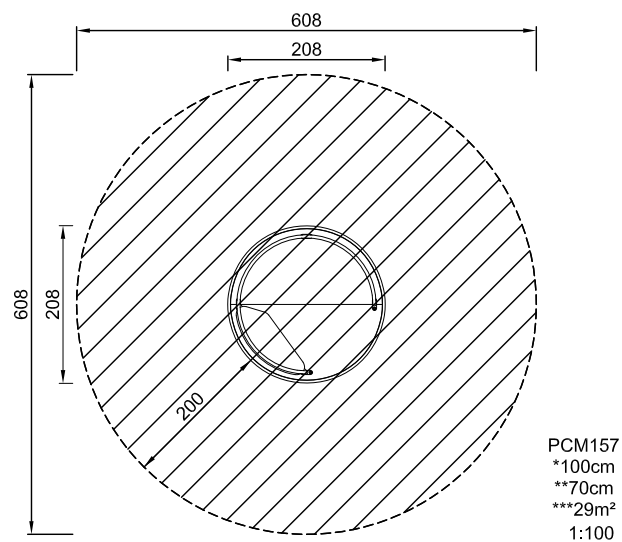
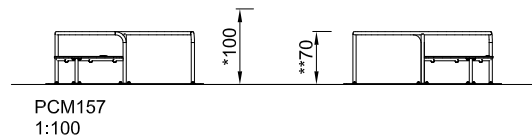
Внимание: Зона безопасности указана в соответствии с ASTM 1487/CSA Z614. Возможны случаи, когда требуется увеличение зоны безопасности. В затруднительных случаях обращайтесь к Вашему консультанту.

Huom: Tämän piirustuksen turva-alue on ASTM 1487/CSA Z614-normin mukainen. Joissain sijoituspaikoissa saatetaan edellyttää suurempaa turva-aluetta. Jos olet epävarma, otathan yhteyttä KOMPANiin.

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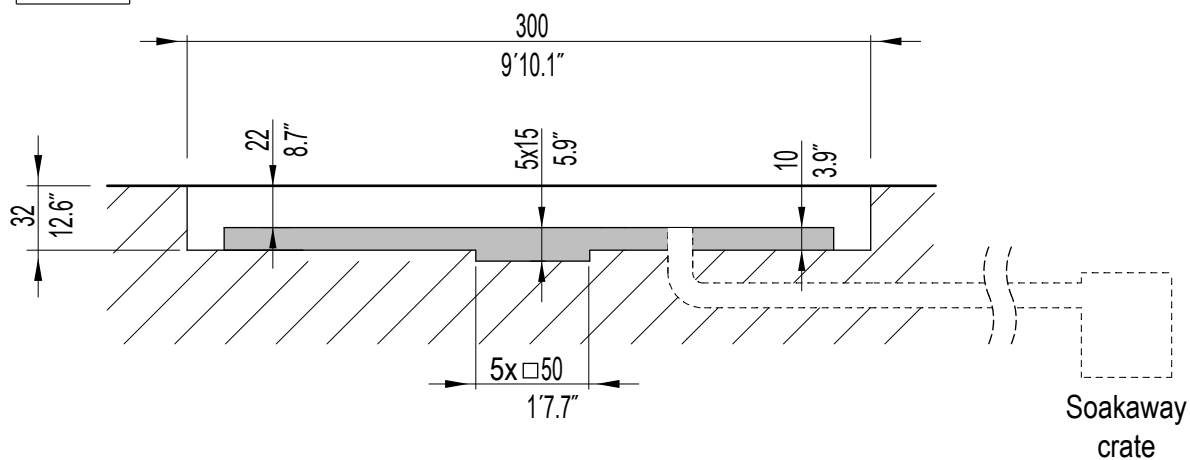
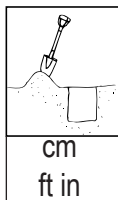
Safety zone in accordance with AS4685



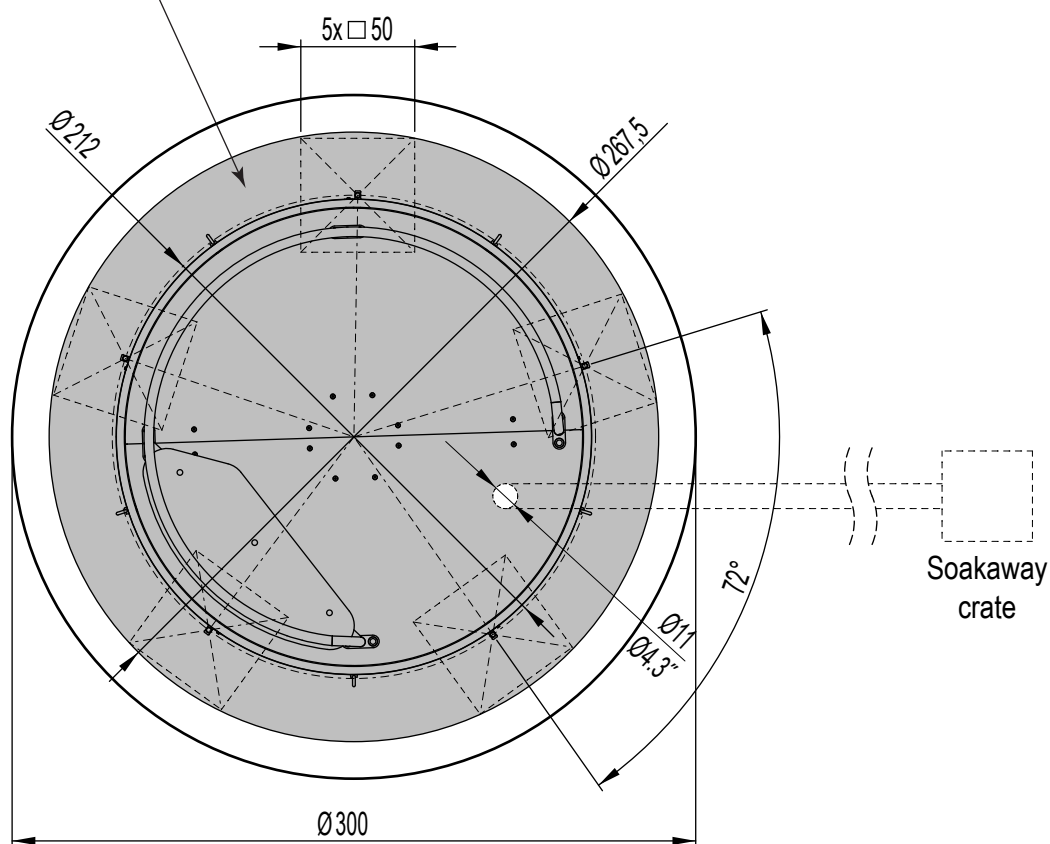
All measurements are in cm

*Free height of fall

Please note: The safety zone shown on this drawing is in accordance with AS4685. There may be some locations where a larger safety zone is required. If in doubt, please contact your play consultant.



Concrete 0,625 m³
Ø267,5 x 10cm/15cm
Ø8'9.3" x 3.9'/5.9"
Béton - Hormigón
Cemento - Beton
Betong - Beton
Бетон - Betonointi





A



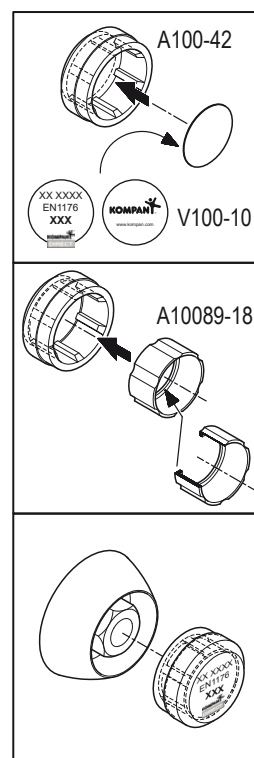
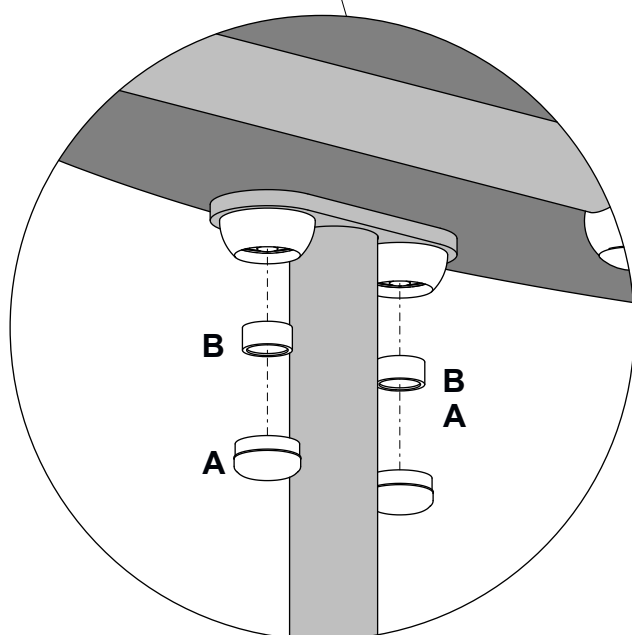
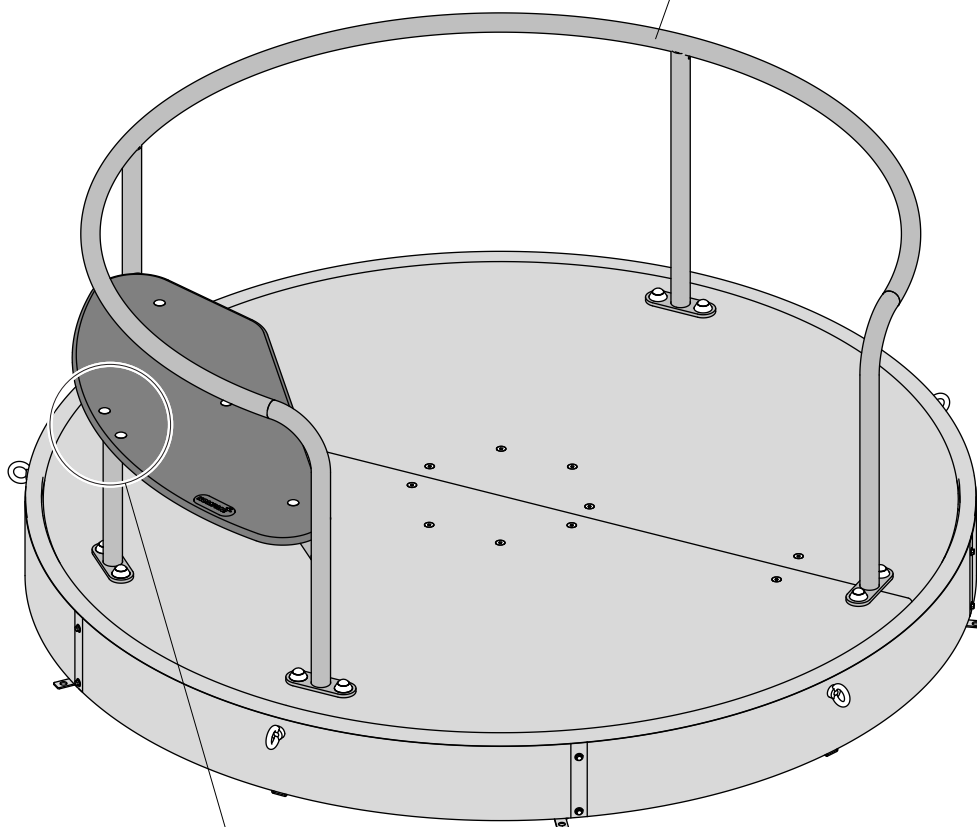
A100-42

B





A10089-18

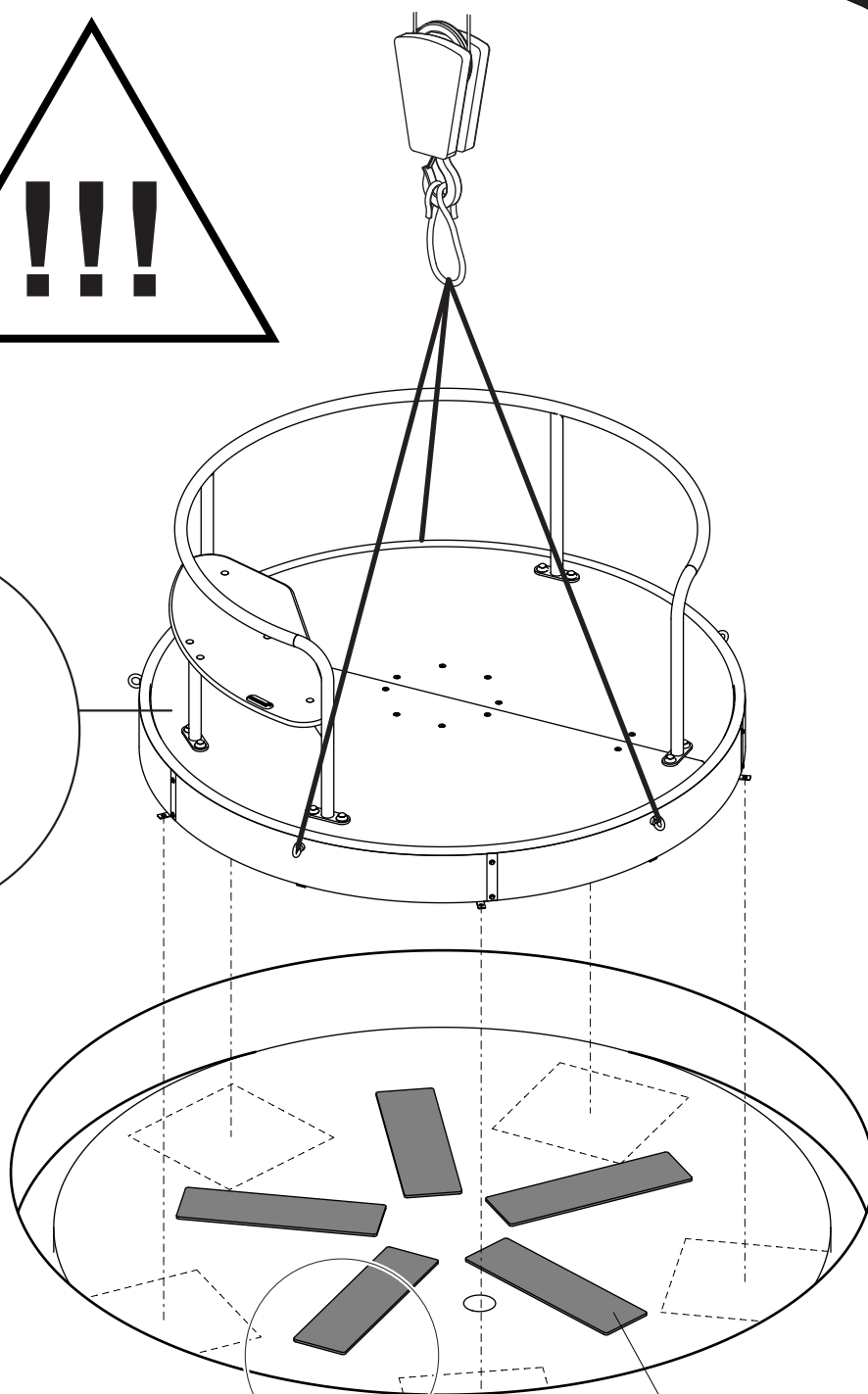
AC122222-11 - PCM157-0201
 AC122223-11 - PCM157-0202
 AC122222-213 - PCM157-0203
 AC122223-213 - PCM157-0204
 AC122222-303 - PCM157-0205
 AC122223-303 - PCM157-0206



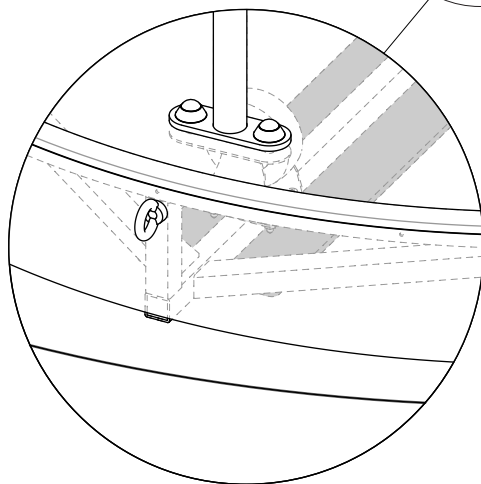



PCM157-0201 ~ 220kg
PCM157-0203 ~ 220kg
PCM157-0205 ~ 220kg

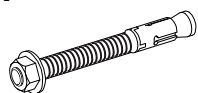

PCM157-0202 ~ 244kg
PCM157-0204 ~ 244kg
PCM157-0206 ~ 244kg



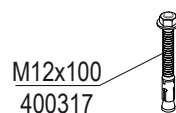
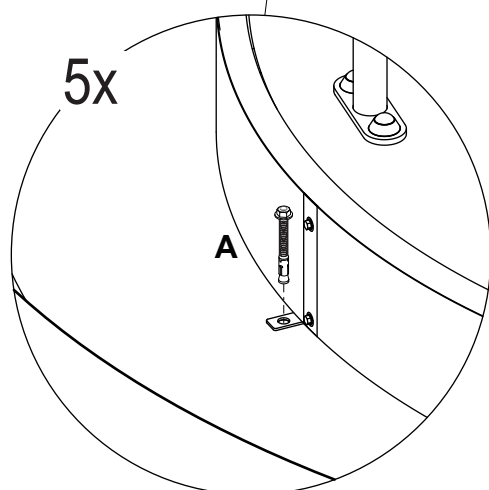
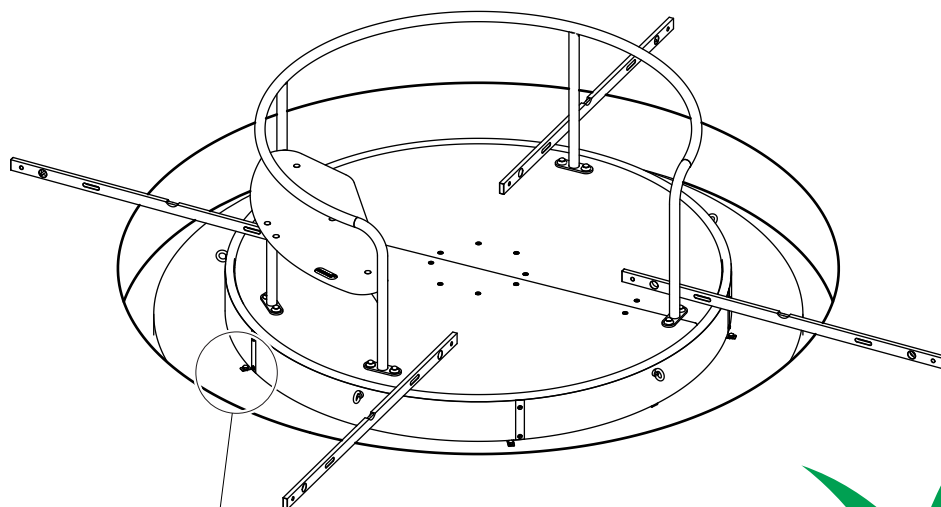
5x A122055-06



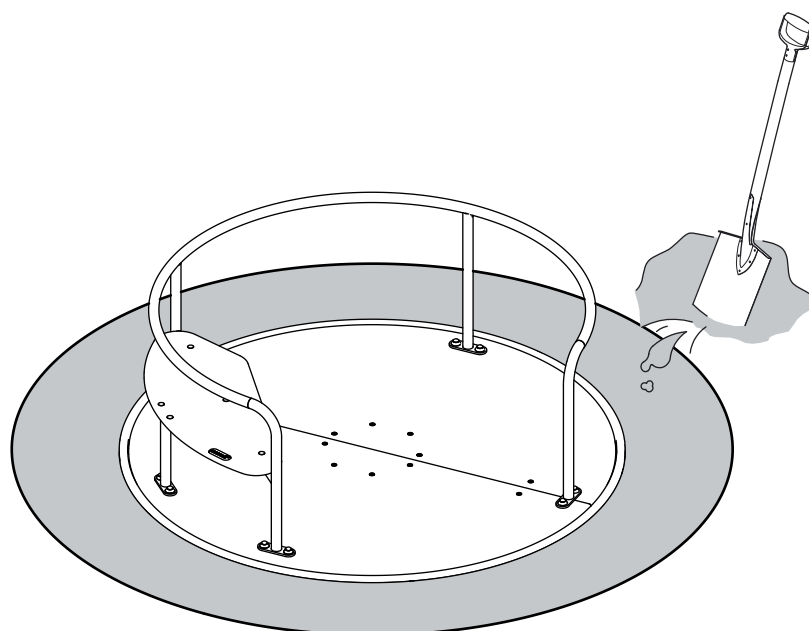
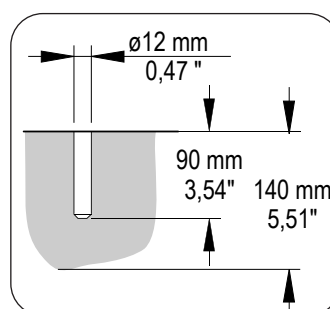
A

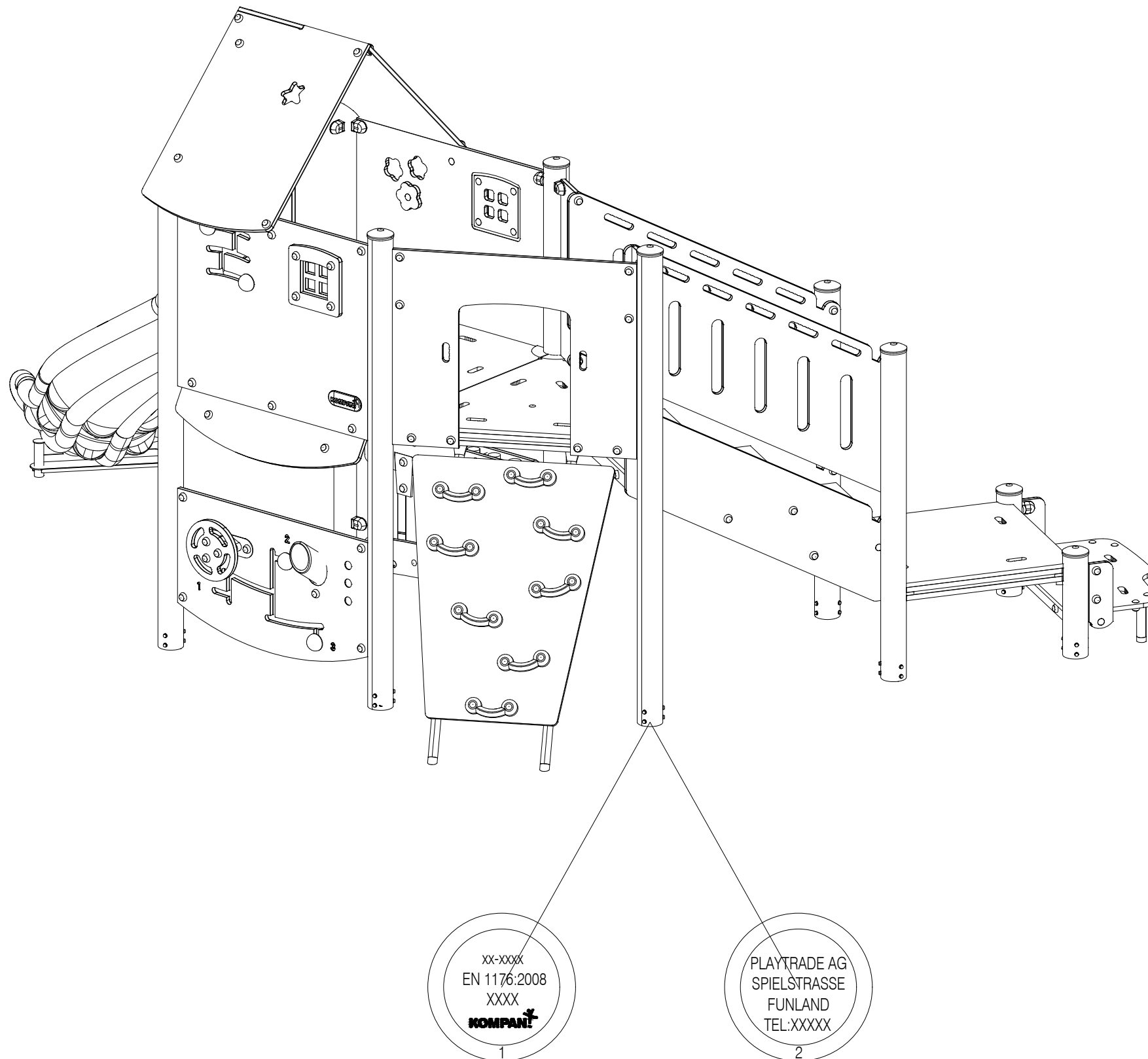


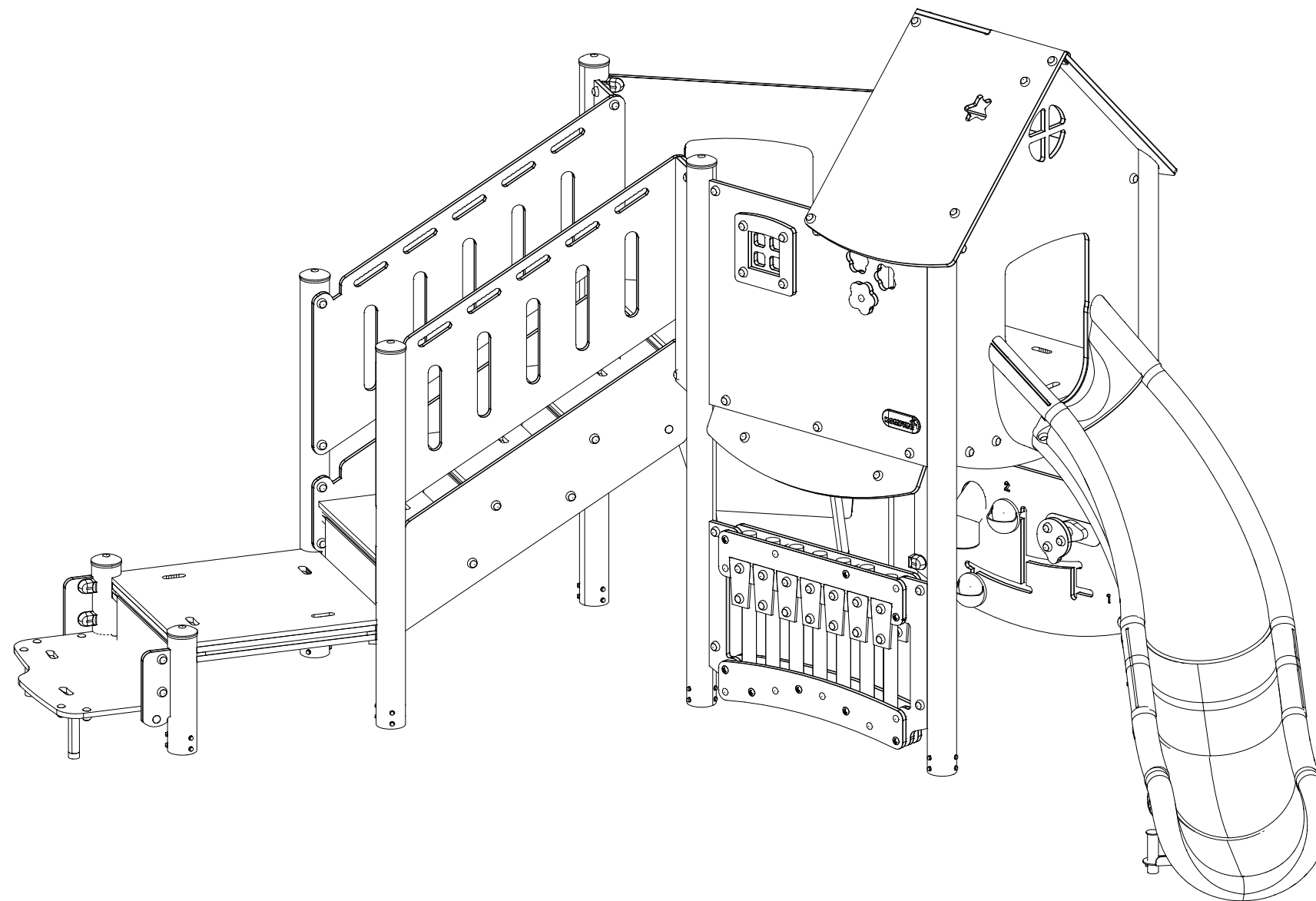
400317

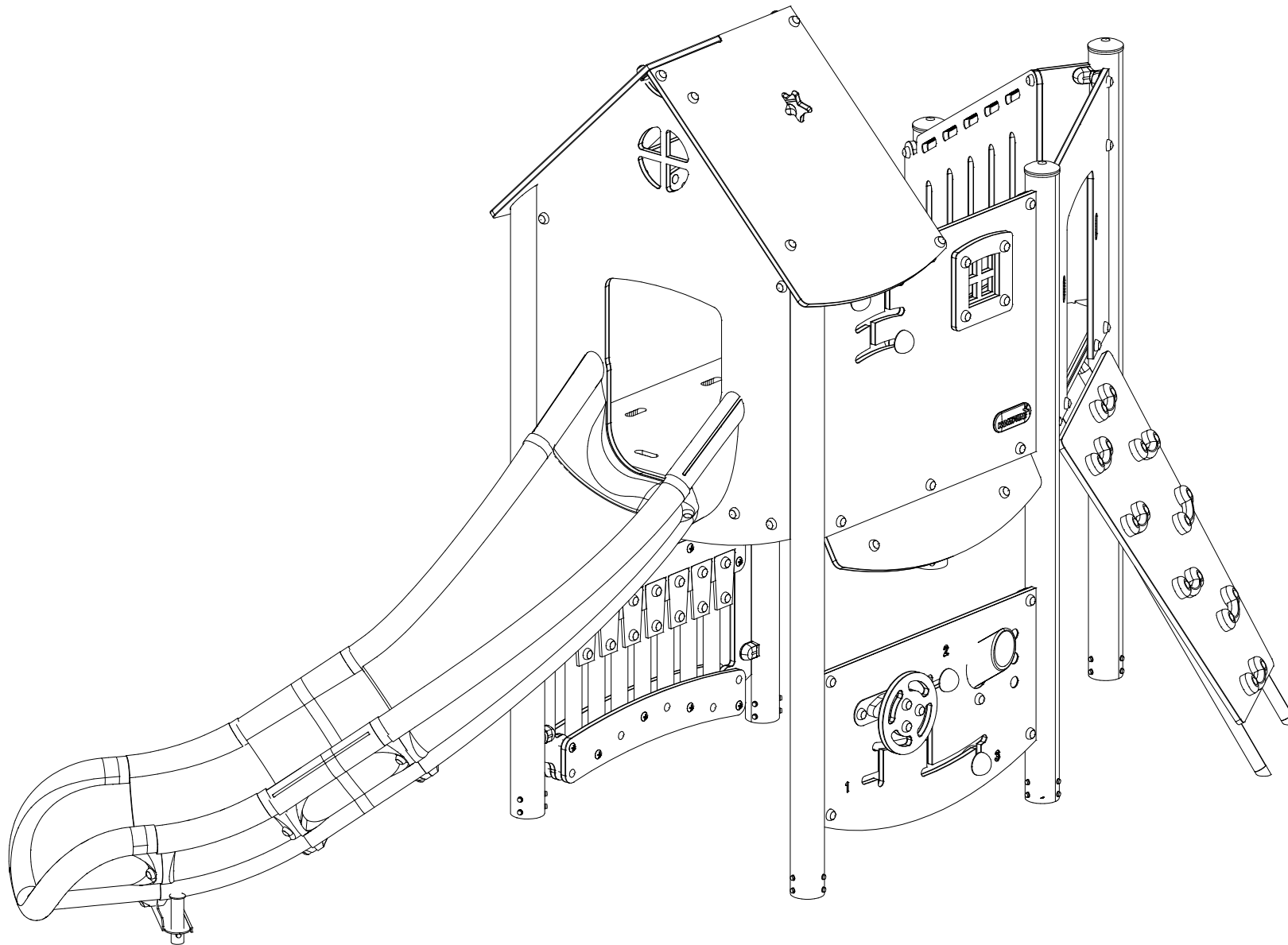


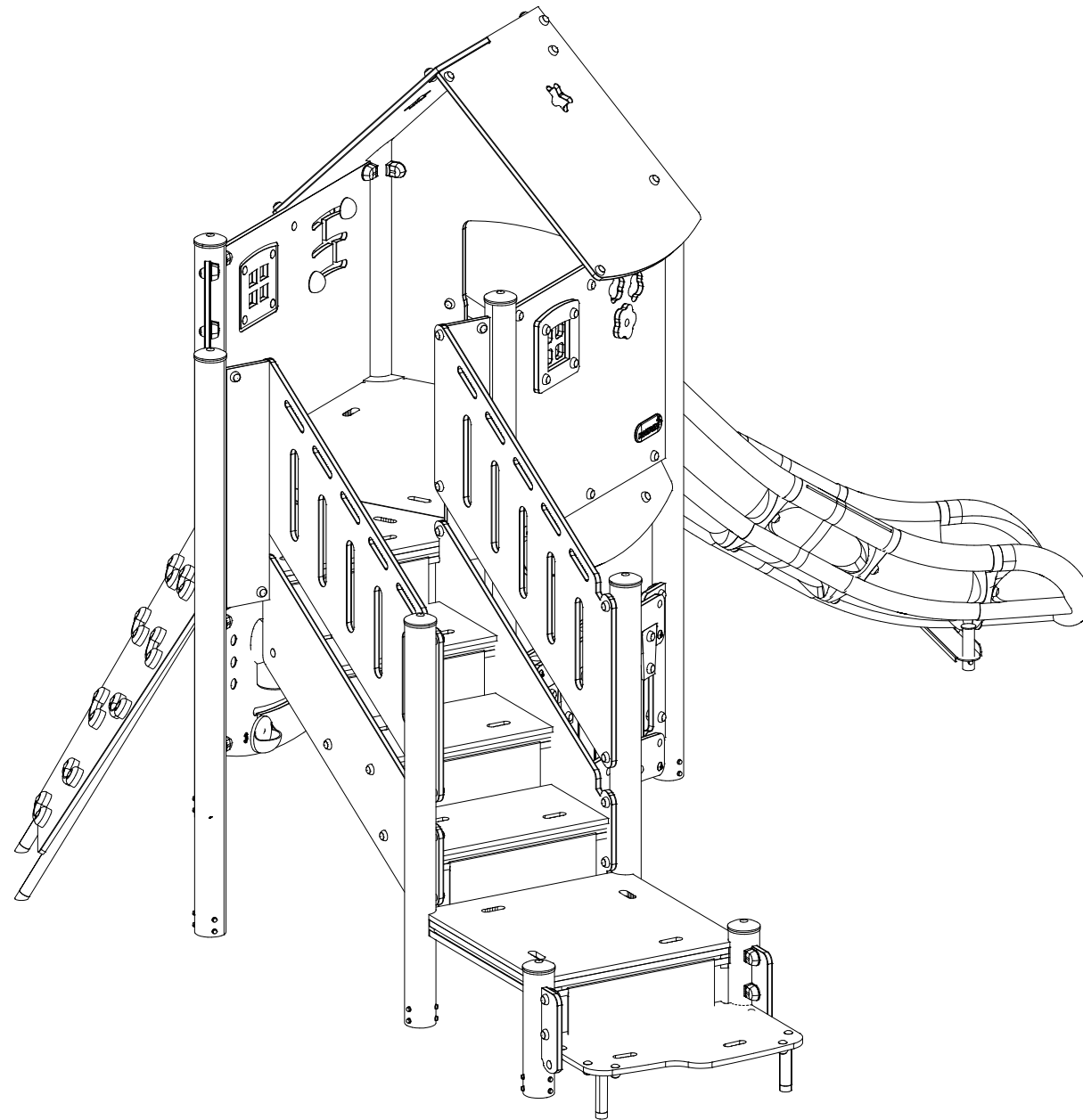
400317 - 12 mm:



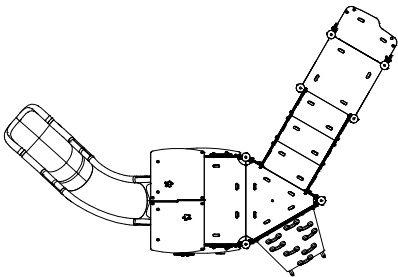











PCM103731
ID ----
TOMKAT
2021-09-27



Scale: 1/4" = 1'-0"

Foundation: 90 cm

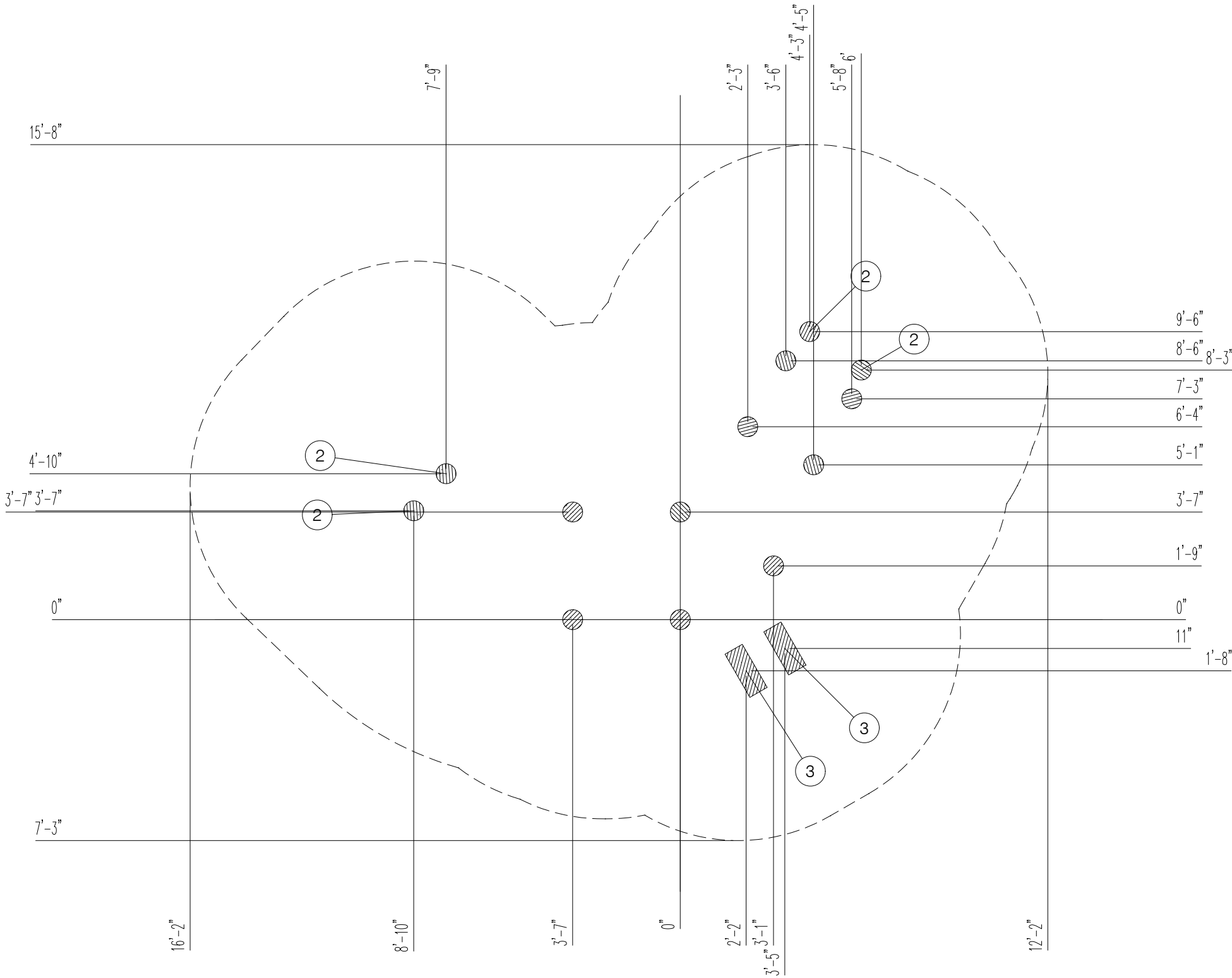
All Unspecified Holes

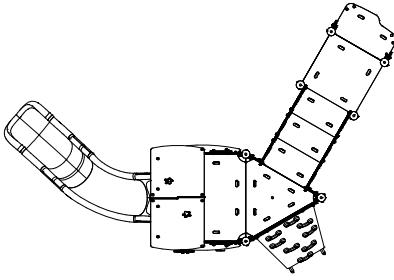
  = 

Beton
Beton
Concrete
Hormigón
Béton
Cemento
Beton
Betong

0 m³ 0 cu.ft.

Safety Zone
Perimeter: 84 ft
Area: 454,7 ft²

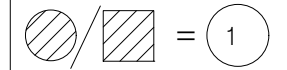




Scale: 1:50

Foundation: 90 cm

All Unspecified Holes



Beton

Beton

Concrete

Hormigón

Béton

Cemento

Beton

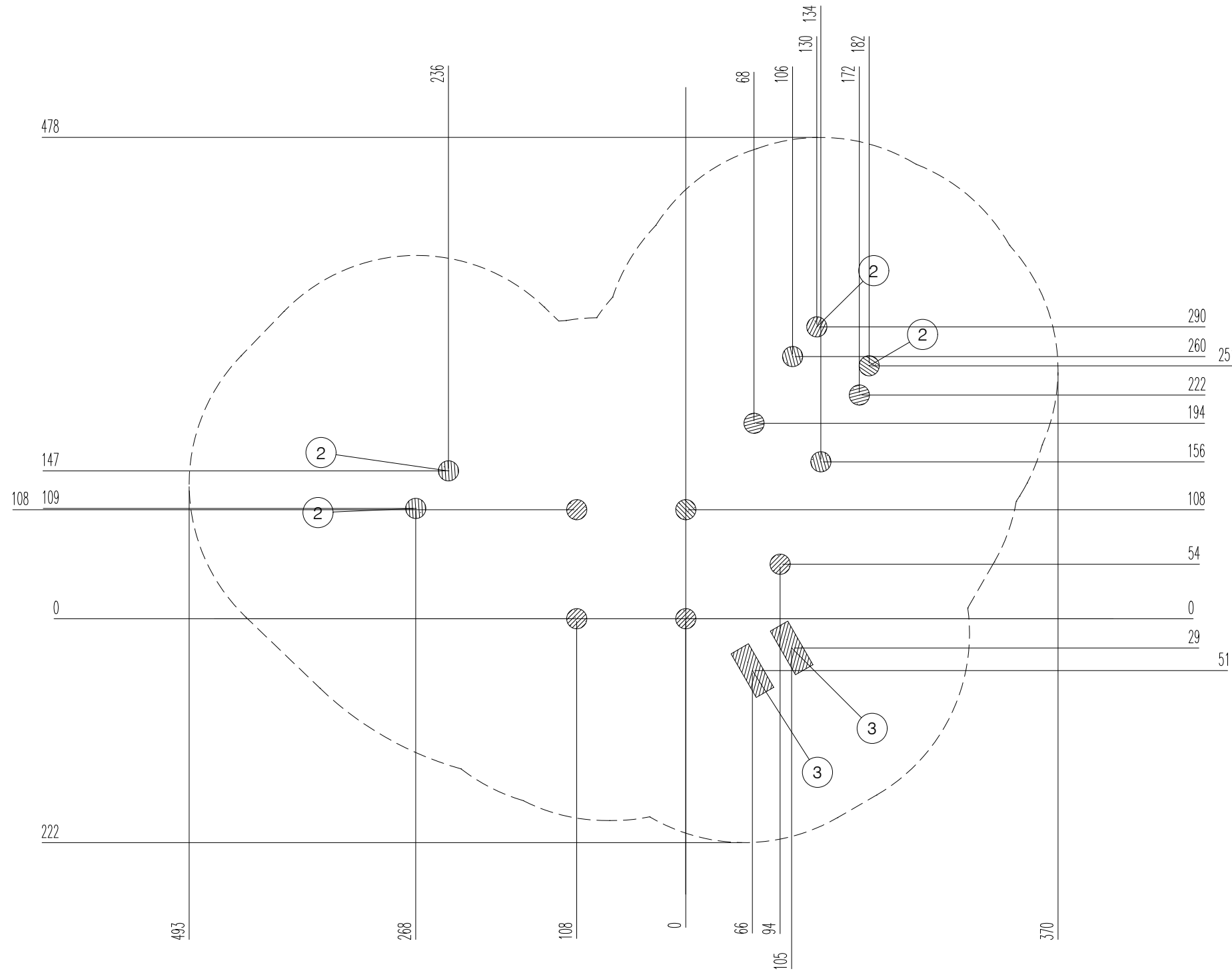
Betong

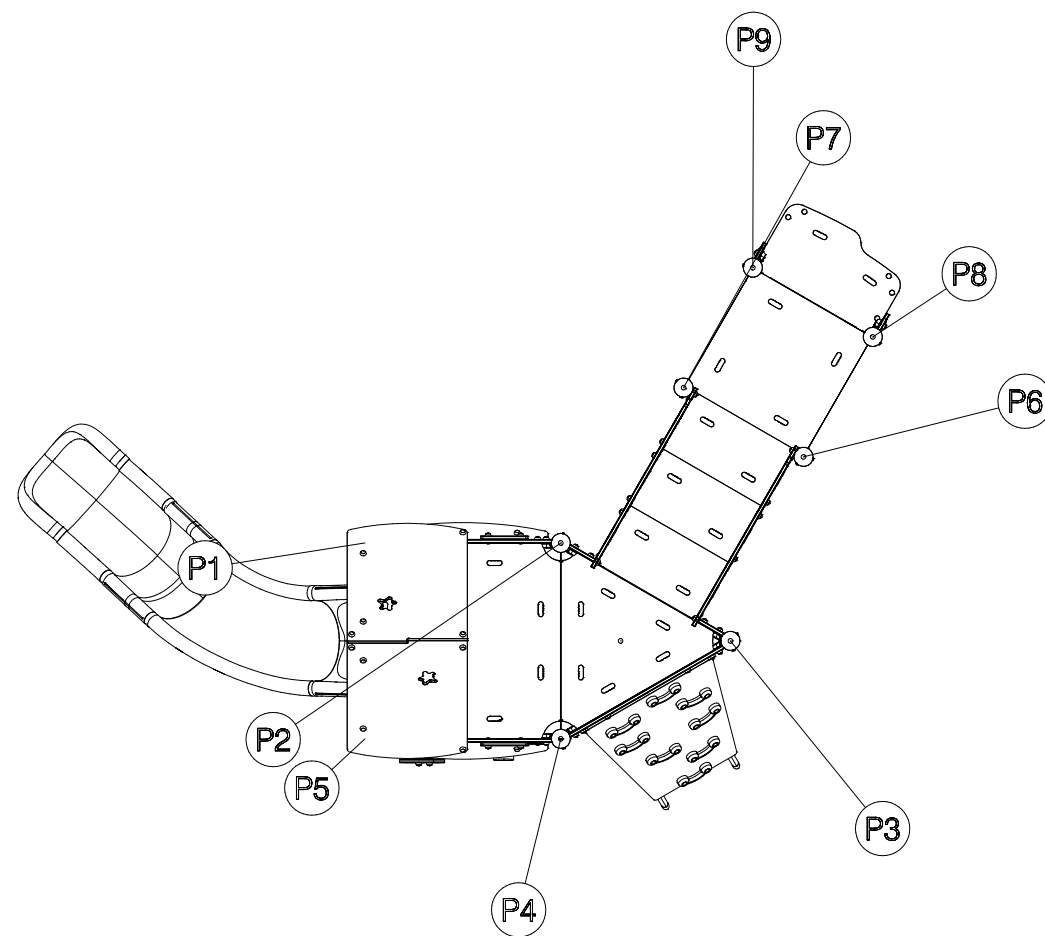
0 m³ 0 cu.ft.

Safety Zone

Perimeter: 26 m

Area: 42,3 m²

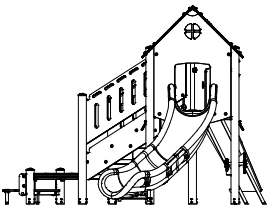
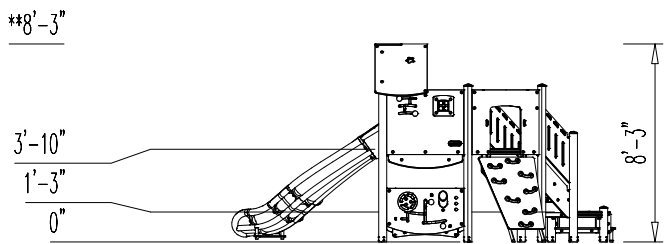




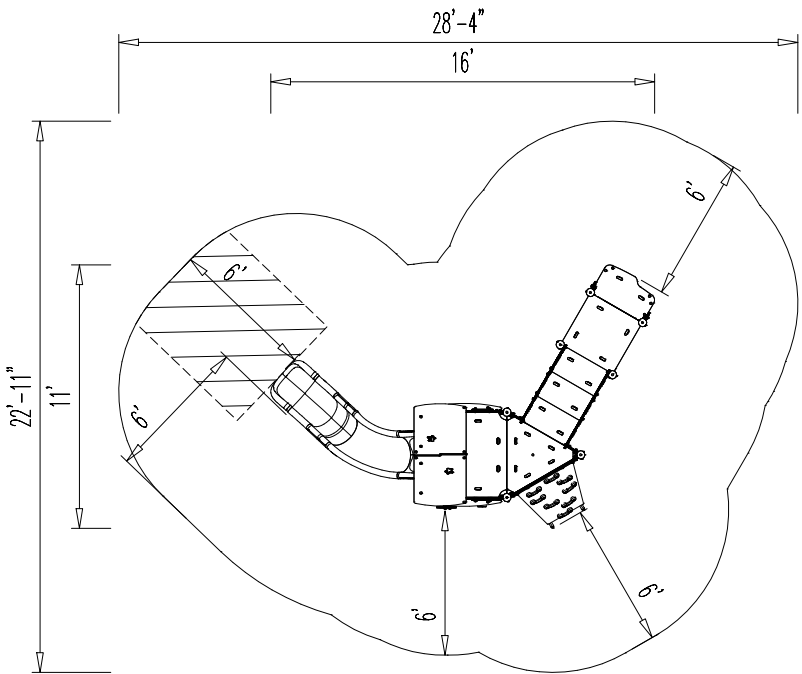
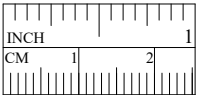
ASTM

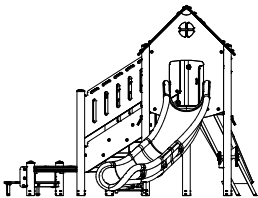
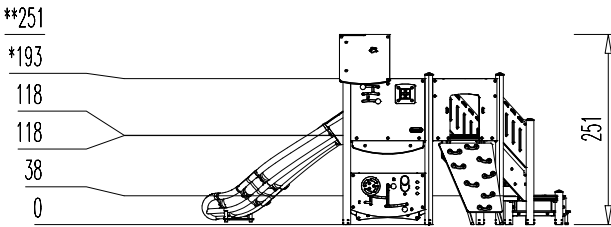


PCM103731
ID ----
TOMKAT
2021-09-27

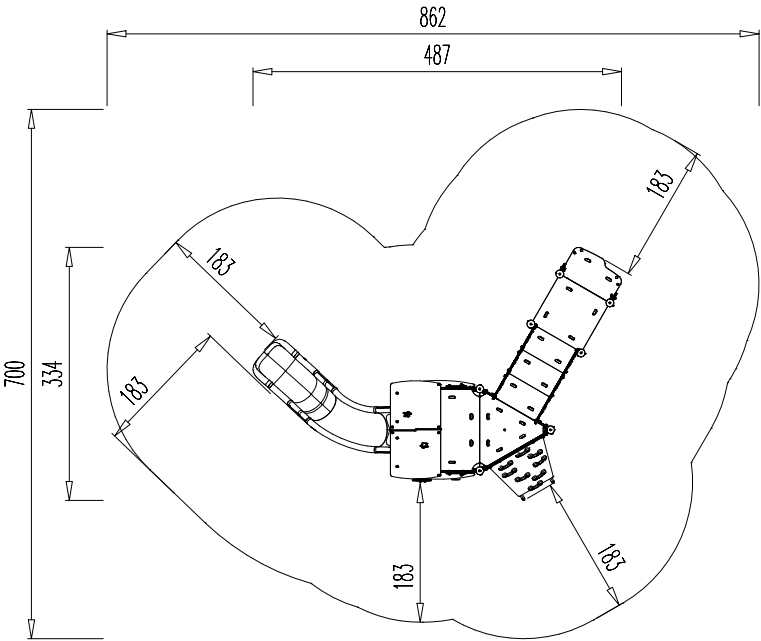
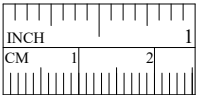


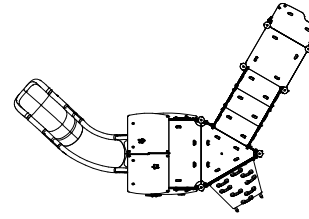
Scale: 1/8" = 1'-0"





Scale: 1:100





A2-CP100100-06



A5-CP800300

TOWER-A



A1-CP302200



A3-CP500212



A1-CP810800



A3-CP422600



CP100200-08



A1-CP200600



A4-CP301200



CP100500-08



A1B-CP110100-05



A4-CP200800



A2-CP402100



A4-CP810800



A2-CP500504



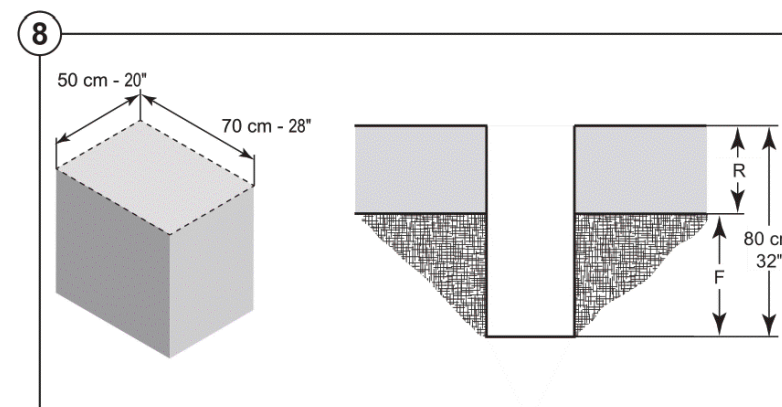
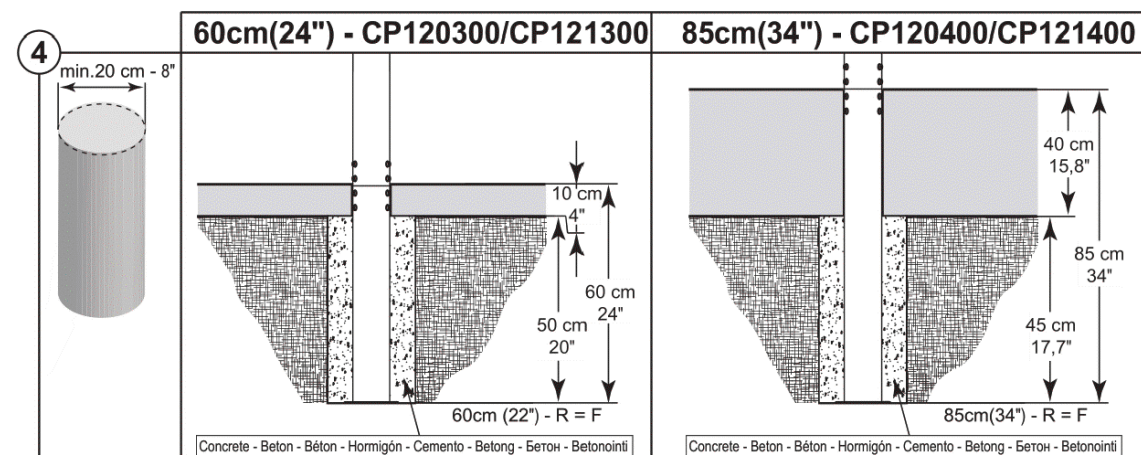
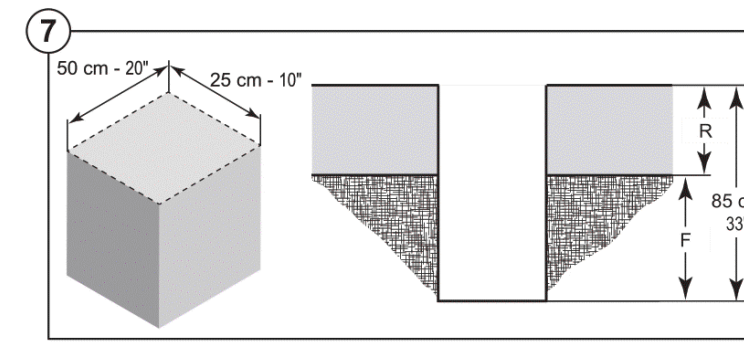
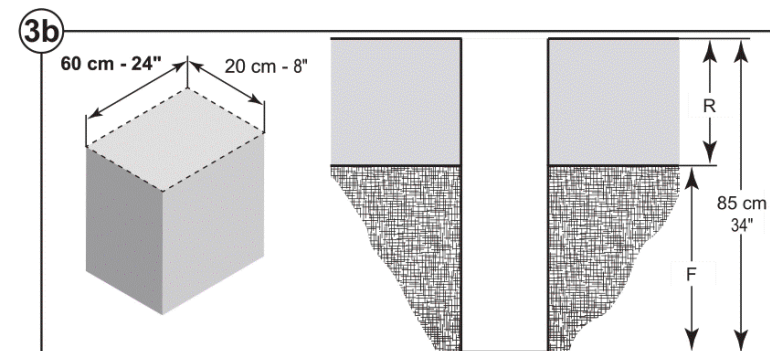
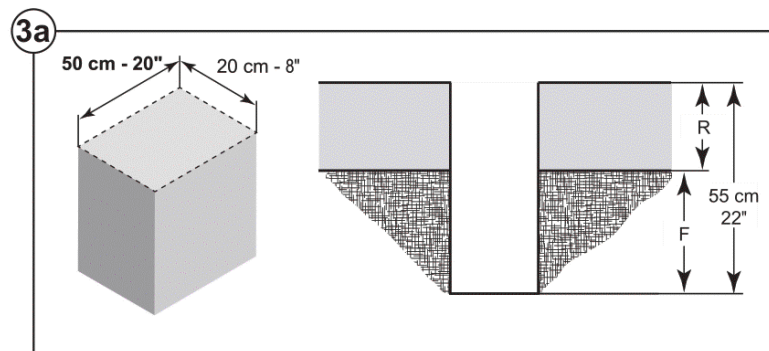
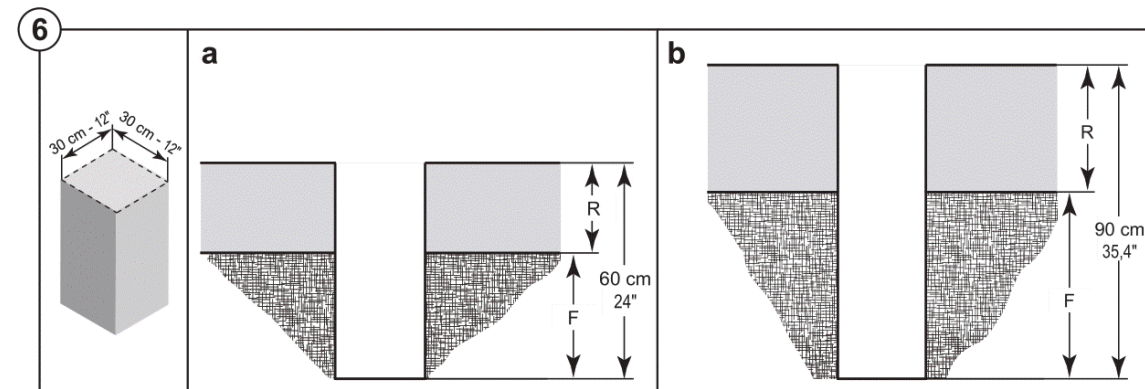
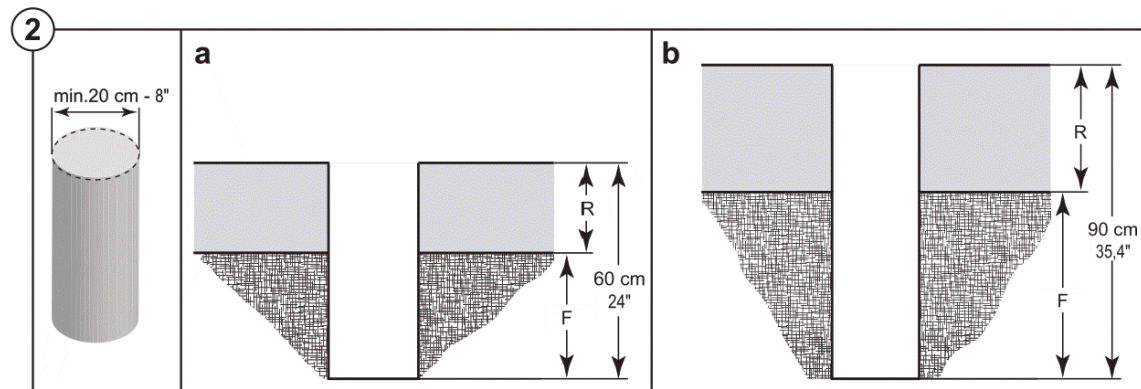
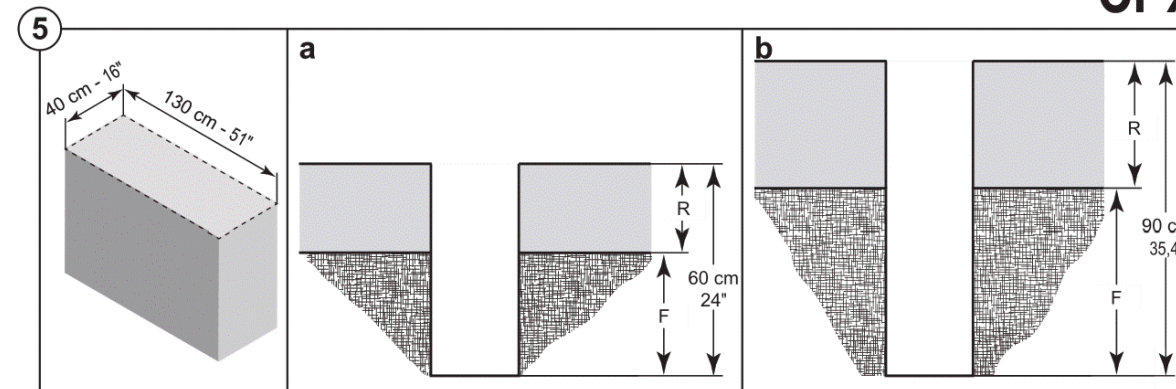
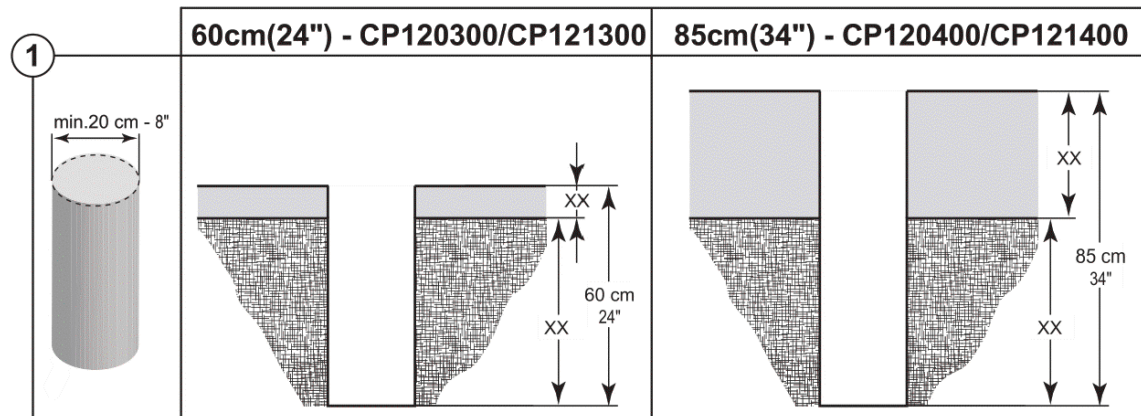
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A2-CP500400

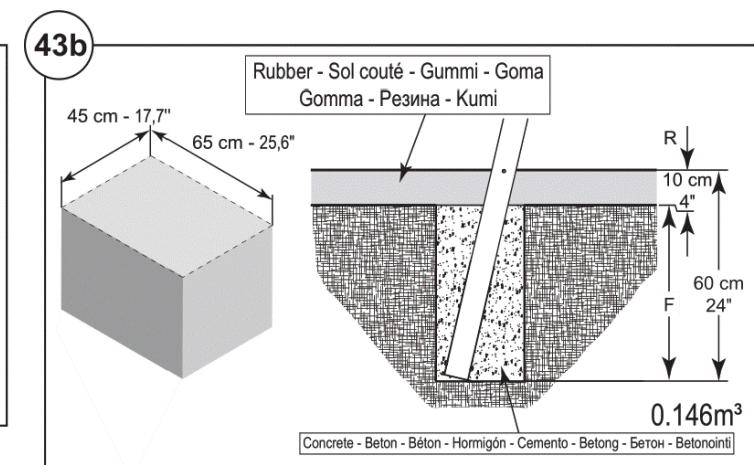
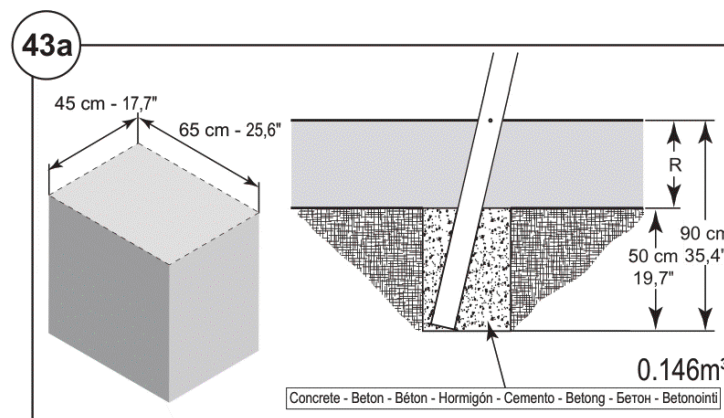
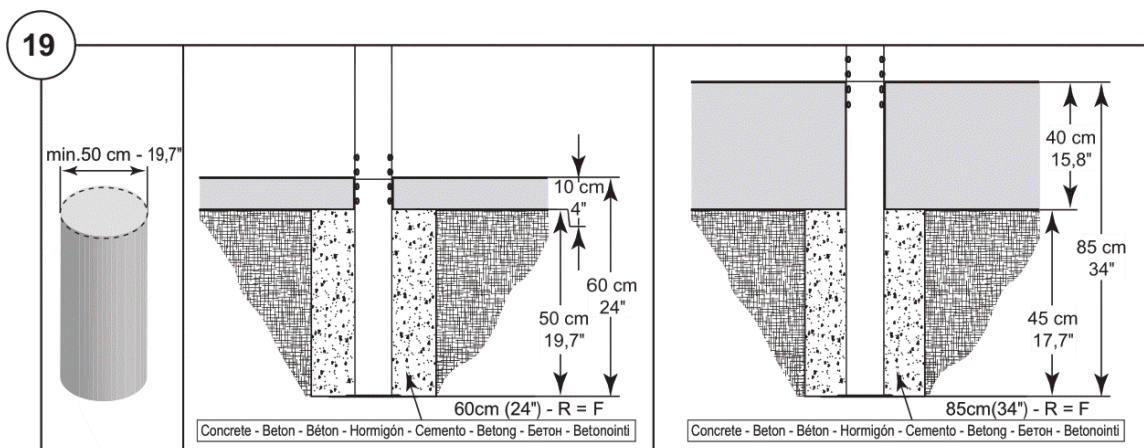
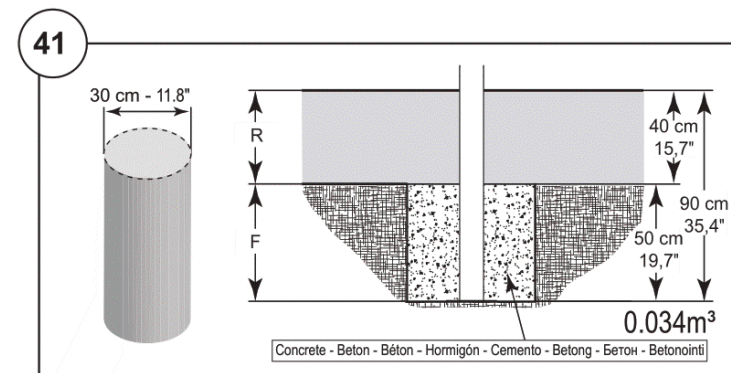
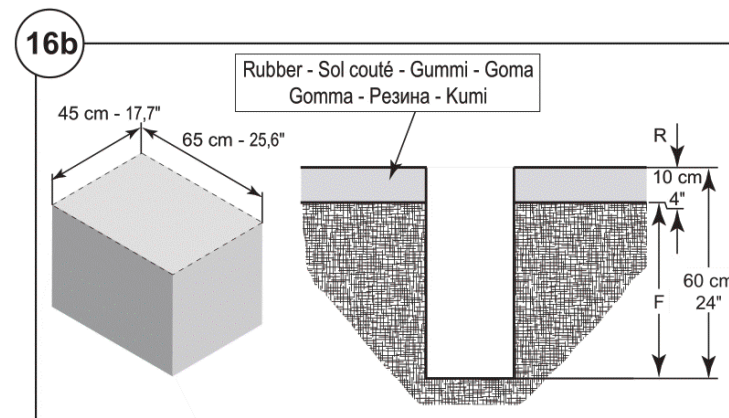
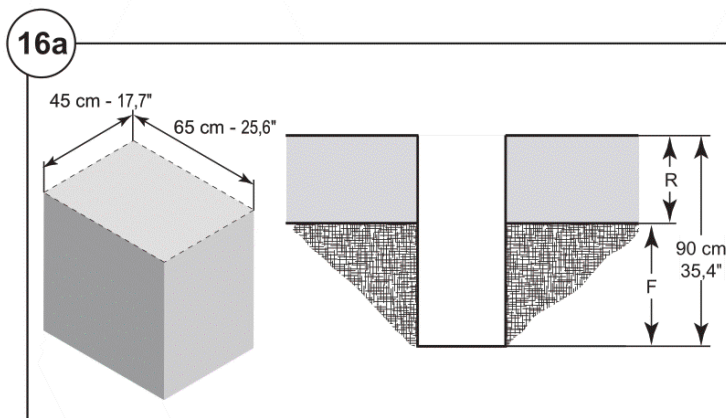
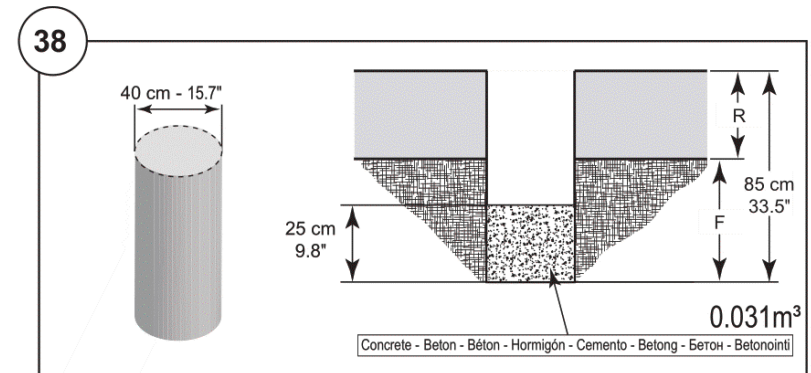
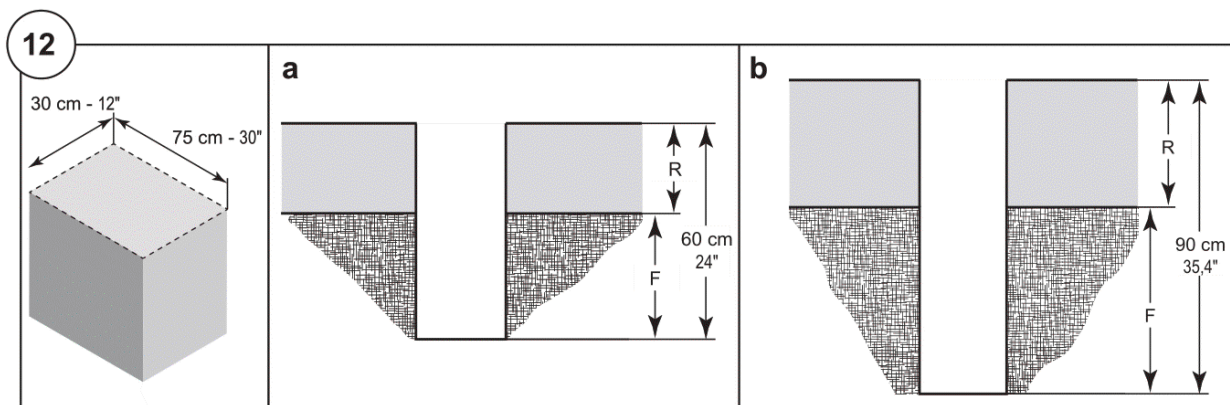
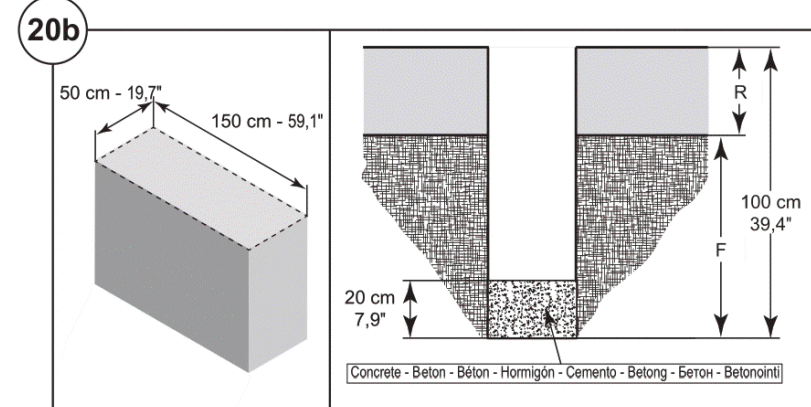
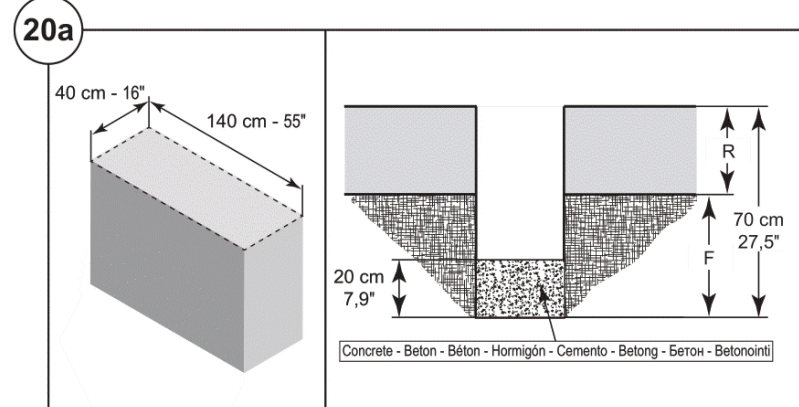
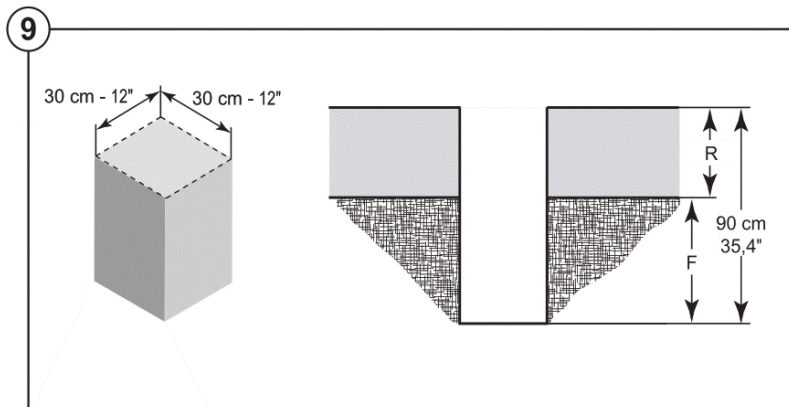


A5-CP601312



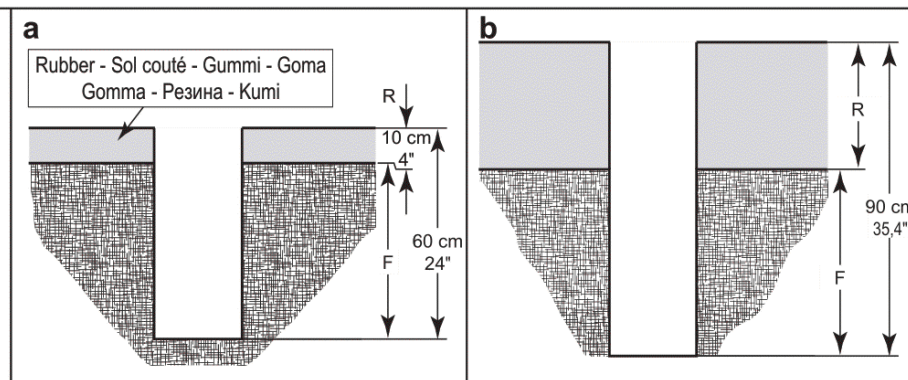
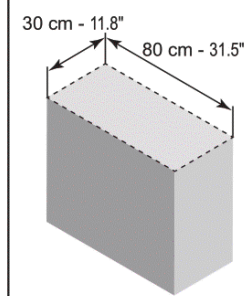
R: Resilient surfacing - Fallschutzbelag
 Revêtement amortissant - Recubrimiento amortiguador - Materiale ammortizzanto
 Veiligheidsondergrond - Fallunderlag
 Faldunderlag - Безопасное покрытие
 Turva-alusta

F: Foundation - Fundament - Fondement
 Fondazione - Fundamento - Fonden - Stiftelsen
 Perustus - Stichting - Фонд

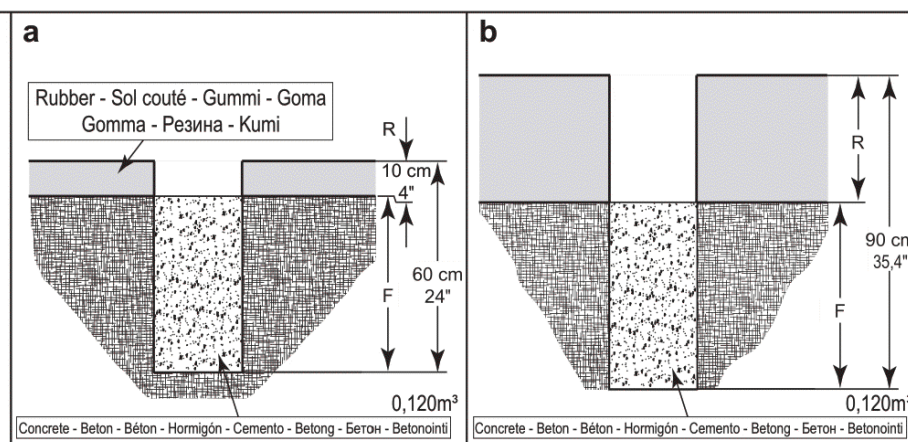
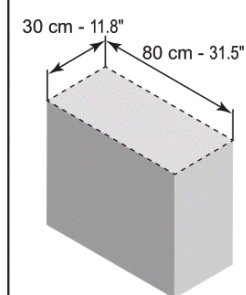




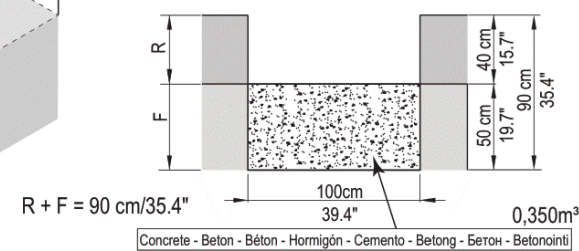
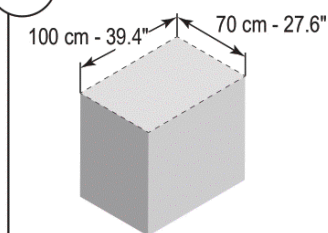
44



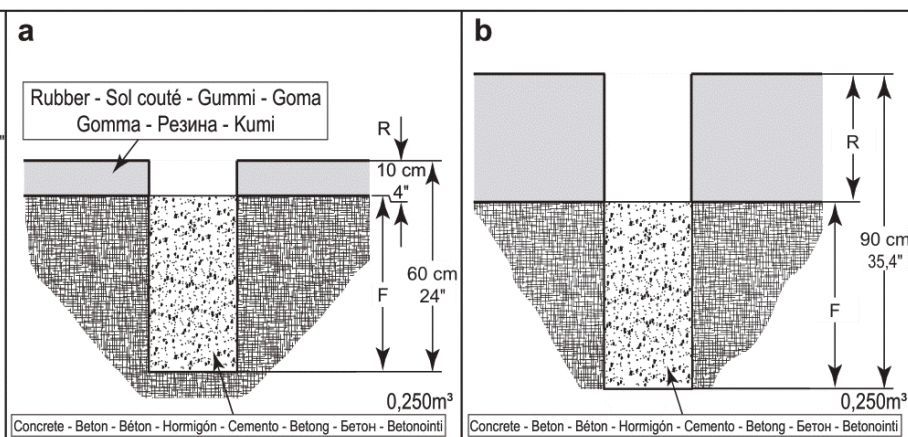
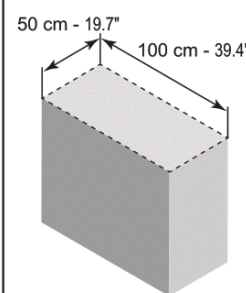
45



46



47



Important! The concrete must be sufficiently hardened before the play item may be used.

Wichtig! Vor der Inbetriebnahme des Spielräräts muß der Beton ausreichend abgebunden haben.

Important! Le béton doit avoir suffisamment durci avant de mettre en service l'équipement de jeux.

Importante! El hormigón debe estar suficientemente endurecido antes de comenzar a utilizar el equipo de juego.

Importante! Prima de utilizzare le attrezzature da gioco, il cemento deve essere sufficientemente solidificato.

Belangrijk! Het beton moet voldoende gehard zijn voordat het speeltoestel in gebruik wordt genomen.

Viktigt! Betongen måste ha härdat tillräckligt innan lekredskapet börjar användas.

Viktigt! Betonen skal være tilstrækkeligt hærde, før legeredskabet tages i brug.

Важно! Перед использованием сооружений убедитесь, что бетон затвердел.

HUOM! Betonivalun on oltava tarpeeksi kuiva, ennen kuin leikkivälinettä saa käyttää.

R: Resilient surfacing - Fallschutzbelag - Revêtement amortissant
Recubrimiento amortiguador - Materiale ammortizzante
Veiligheidsondergrond - Fallunderlag - Faldunderlag
Безопасное покрытие - Turva-alusta

F: Foundation - Fundament - Fondement - Fondazione
Fundamento - Fonden - Stiftelsen - Perustus - Stichting - Фонд



PEIRCE SCHOOL

MEO22329 • 04.13.2022



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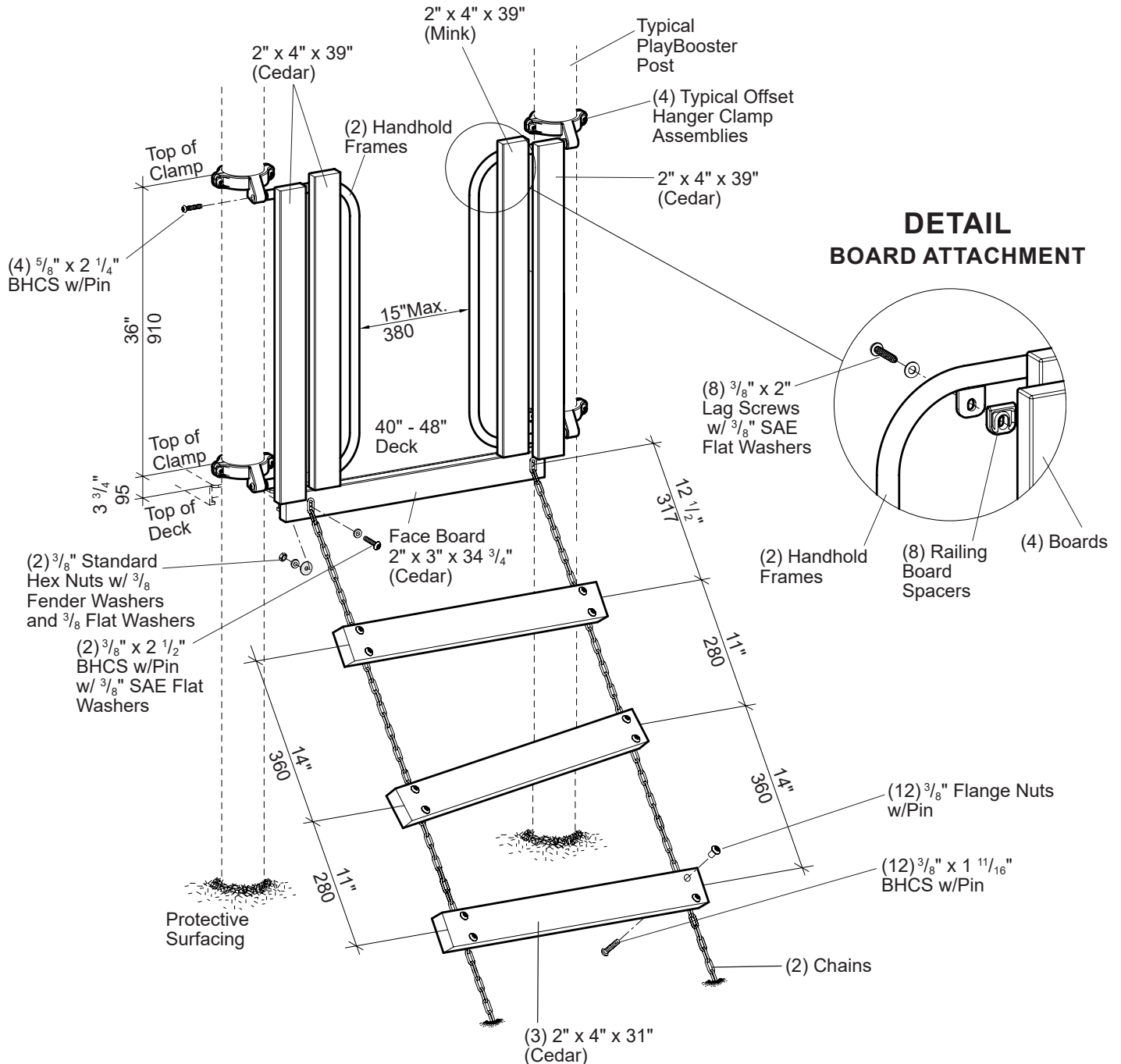


PEIRCE SCHOOL

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Play Naturally™

PlayBooster® 169318 Wood Wiggle Ladder, 40"-48" Deck

Sheet 1 of 2

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

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Document #24972900



PlayBooster® 169318 Wood Wiggle Ladder, 40"-48" Deck

Parts List

Part#	Description	Qty.
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
105327	5" Half Clamp, Specify Color	4
113729	Offse Hanger Clamp, Specify Color	4
118029	Support (DB)	2
168211	Handhold Frame, Tan	2
168467	2" x 4" x 39" Board, Cedar or Mink	4
175267	2" x 3" x 34 3/4" Deck Face Board, Cedar	1
169120	2" x 4" x 31" Wiggle Ladder Board, Cedar	3
175251	3/16" x 57 7/16" Chain (40" Deck)	2
174404	3/16" x 67 7/8" Chain (48" Deck)	2
249718	Wiggle Ladder Hardware Package	1
100174	3/8" x 2 1/2" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	2
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	4
100327	3/8" Standard Hex Nut, SST	4
100351	3/8" Tee Nut, SST	8
100353	3/8" Flange Nut w/Pin, SST	12
100365	3/8" SAE Flat Washer, SST	10
123224	3/8" x 1 11/16" BHCS w/Pin, SST	12
139039	3/8" x 2" Lag Screw, SST	8
207485	Railing Board Spacer, Tan	8
100378	3/8" Fender Washer	2
100362	3/8" Flat Washer	2

DB = Direct Bury

Specification

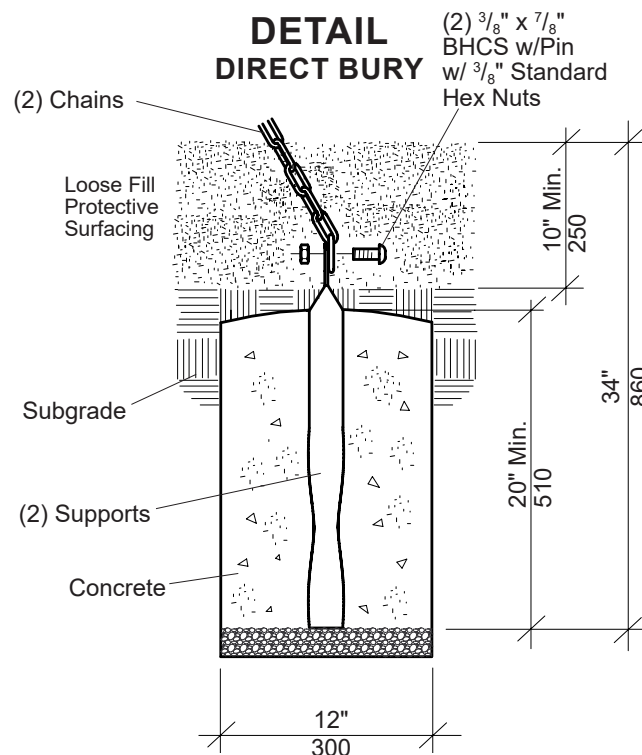
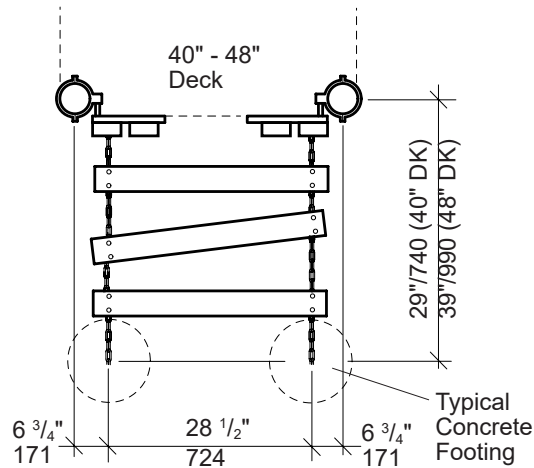
Support (DB):	Fabricated from 1.315" O.D. RS-20 (.080" - .090") galvanized steel tubing.
Chain/Uncoated:	Steel 3/16" straight link chain, 800 lb. working load limit. Finish: ProGuard®.
Poly Board:	Recycled high-density polyethylene, cedar or mink in color.
Handhold Frame:	Weldment comprised of 1.125" O.D. 11 GA. (.120") steel tubing with 203 or 303 stainless steel inserts, with 3/8" internal thread and 1/4" HRPO steel plate. Finish: ProShield®, tan in color.
Clamps:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 3.5 man hours
Concrete:	Approx. 2.6 cu. ft.
Weight:	79 lbs. (40" Deck) 79 lbs. (48" Deck)

Fall Height: Deck Height

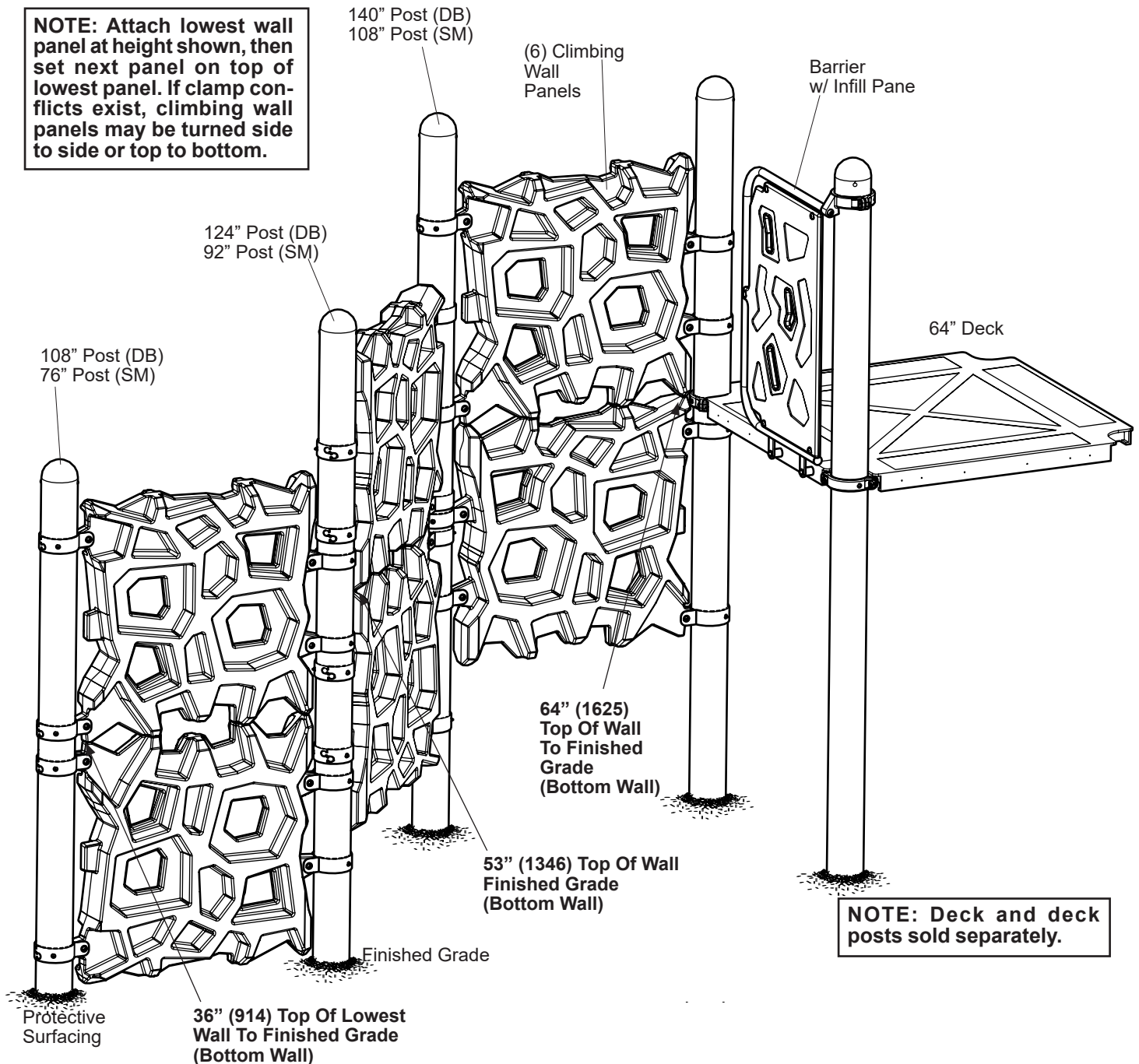
Installation Instructions

- 1) Drill 7/16" holes thru face board, using pilot holes as a guide. Attach chains and deck face board to the face of deck, using 3/8" x 2 1/2" BHCS w/pin with 3/8" SAE flange washers and 3/8" standard hex nuts with 3/8" flange washers and 3/8" fender washers.
- 2) Attach offse hanger clamps to posts at heights shown using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin and 3/8" tee nuts. Refer to the Typical Offse Hanger Clamp Spec Sheet.
- 3) Attach handhold frames to offse hanger clamps, using 5/8" x 2 1/4" BHCS w/Pin.
- 4) Line up pilot holes in boards with spacers and handhold frame tabs and attach, using 3/8" x 2" lag screws with 3/8" SAE flange washers. Refer to the Board Attachment Detail.
- 5) Attach boards to chains, using 3/8" x 1 11/16" BHCS w/pin and 3/8" flange nuts w/pin.
- 6) Determine footing locations by pulling chains tight and laying end on subgrade. Dig footing holes where chains meet subgrade to the width and depth shown.
- 7) Fasten chains to the supports using 3/8" x 7/8" BHCS w/pin and 3/8" standard hex nuts.
- 8) Pour concrete into footing holes. Push supports into concrete until chain is tight and top of support is positioned 1 3/4" above subgrade. Temporarily brace supports into position until concrete has cured. Refer to the Direct Bury Detail.
- 9) After concrete has cured a minimum of 72 hours, remove support brace and install protective surfacing before users are allowed to play on the structure.

PLAN VIEW/FOOTING LAYOUT



NOTE: Attach lowest wall panel at height shown, then set next panel on top of lowest panel. If clamp conflicts exist, climbing wall panels may be turned side to side or top to bottom.



64" Deck Height Shown
72" Deck Height Shown On Sheet 2

PlayBooster®

220544 GeoPlex™ Ground-To-Deck Triple Climber, 64" & 72" Decks

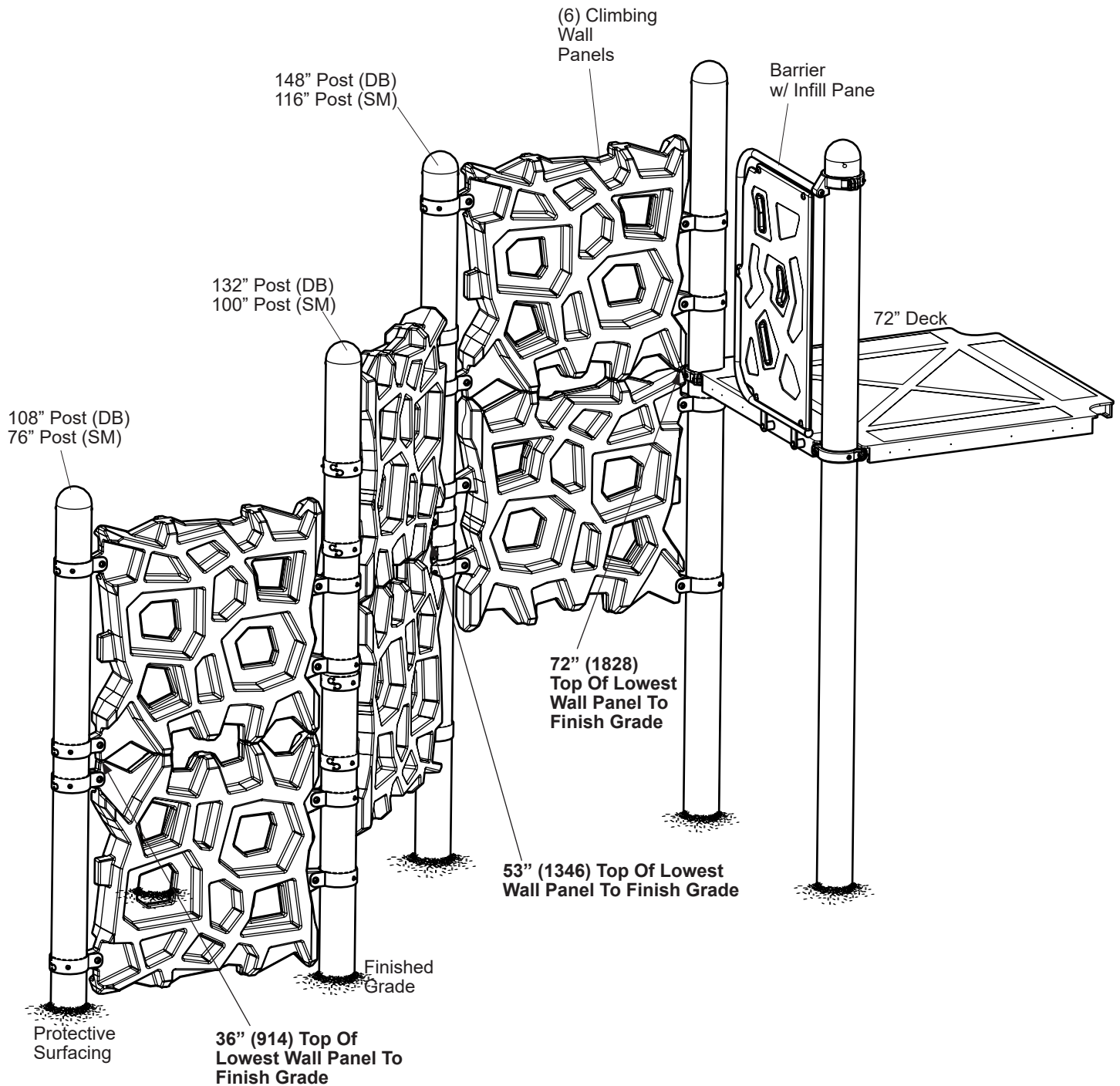
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SAFETY NOTE

Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)



72" Deck Shown

NOTE: Deck and deck posts sold separately.

NOTE: Attach lowest wall panel at height shown, then turn next panel front to back, and set on top of lowest panel.

PlayBooster®

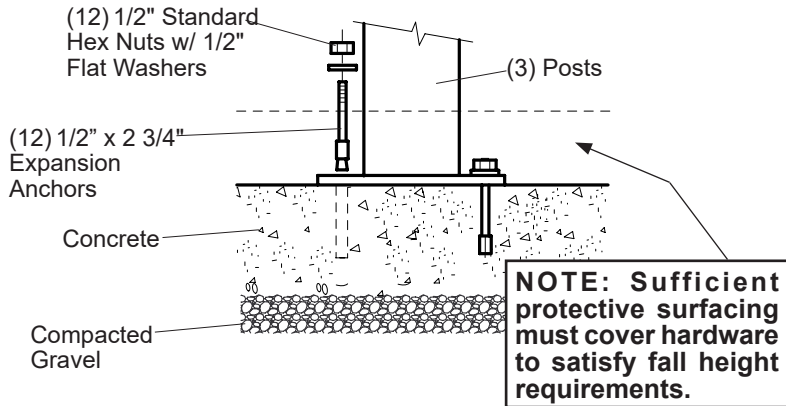
220544 GeoPlex™ Ground-To-Deck Triple Climber, 64" & 72" Decks

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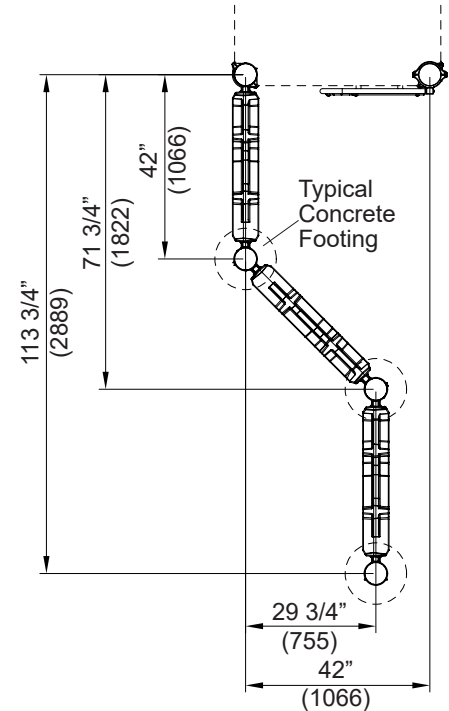
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Sheet 2 of 6

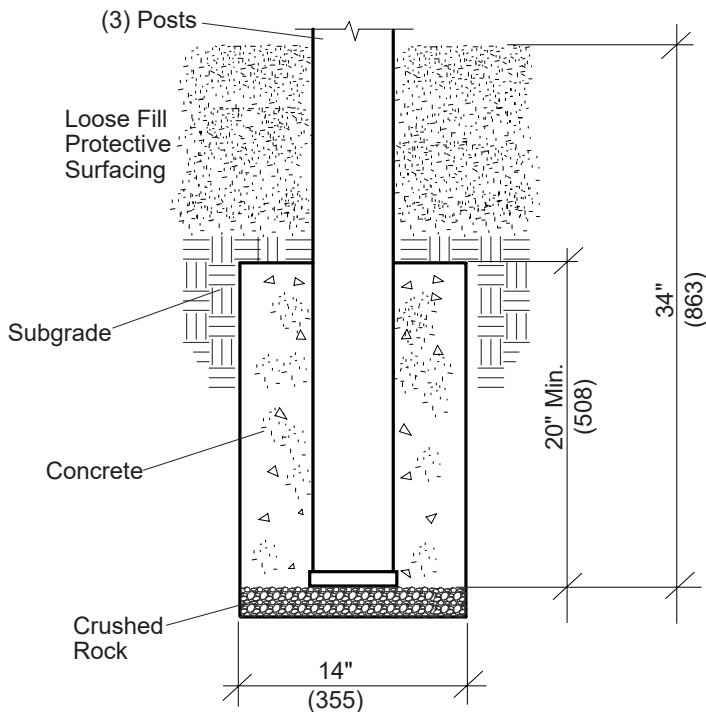
DETAIL SURFACE MOUNT



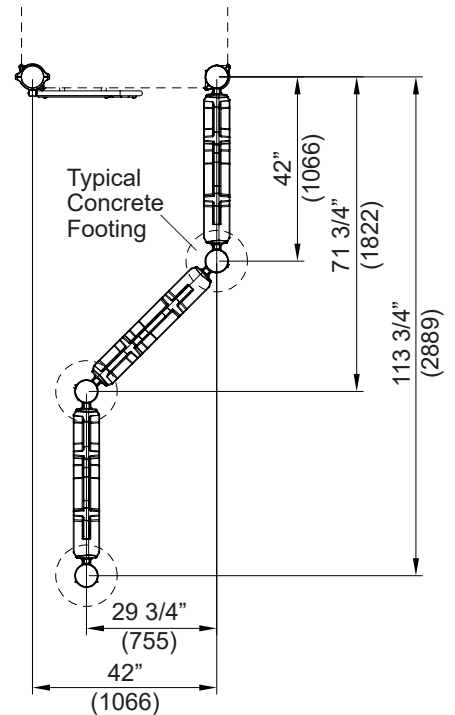
PLAN VIEW/FOOTING LAYOUT RIGHT CONFIGURATION



DETAIL DIRECT BURY



LEFT CONFIGURATION



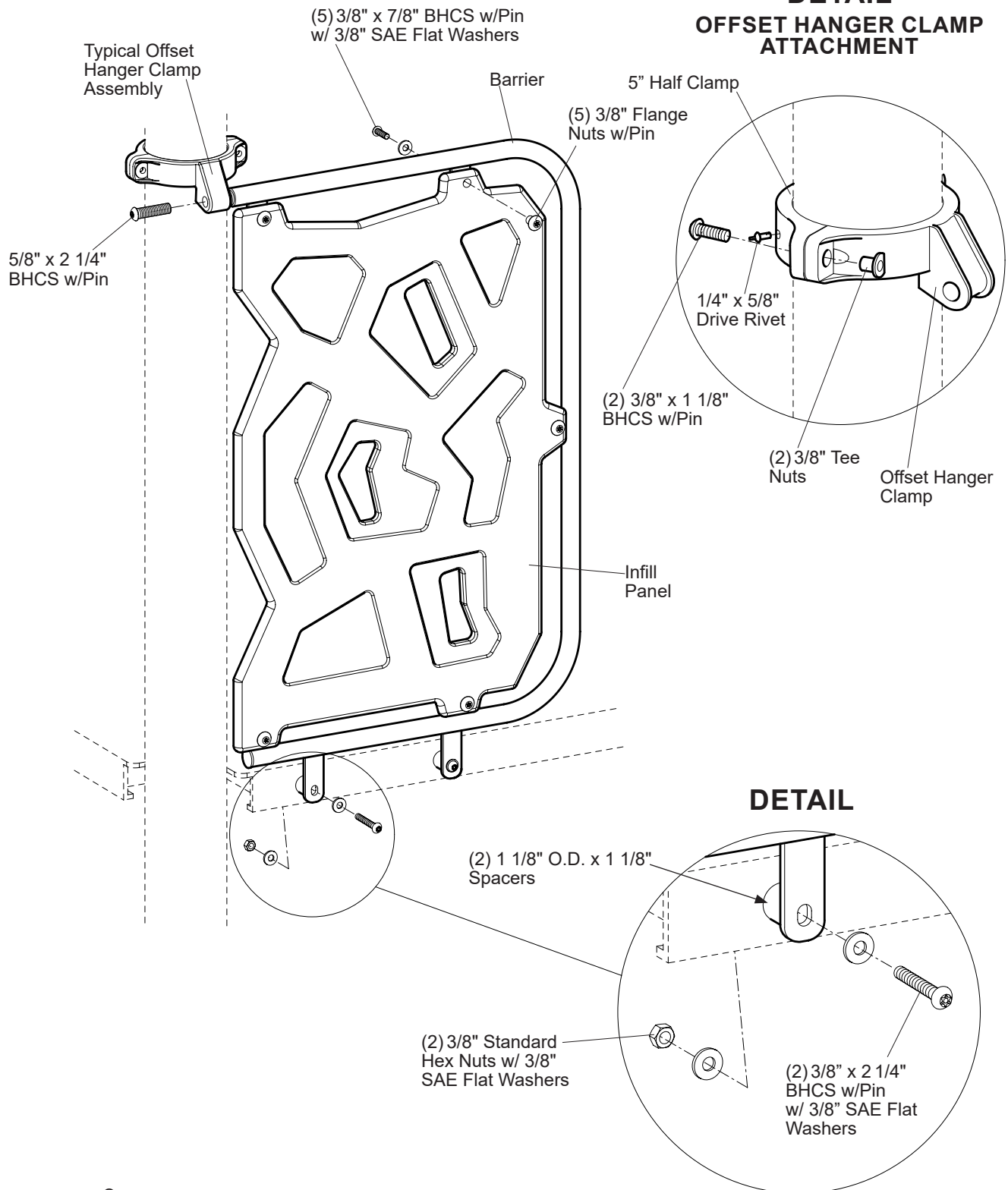
PlayBooster®

220544 GeoPlex™ Ground-To-Deck Triple Climber, 64" & 72" Decks

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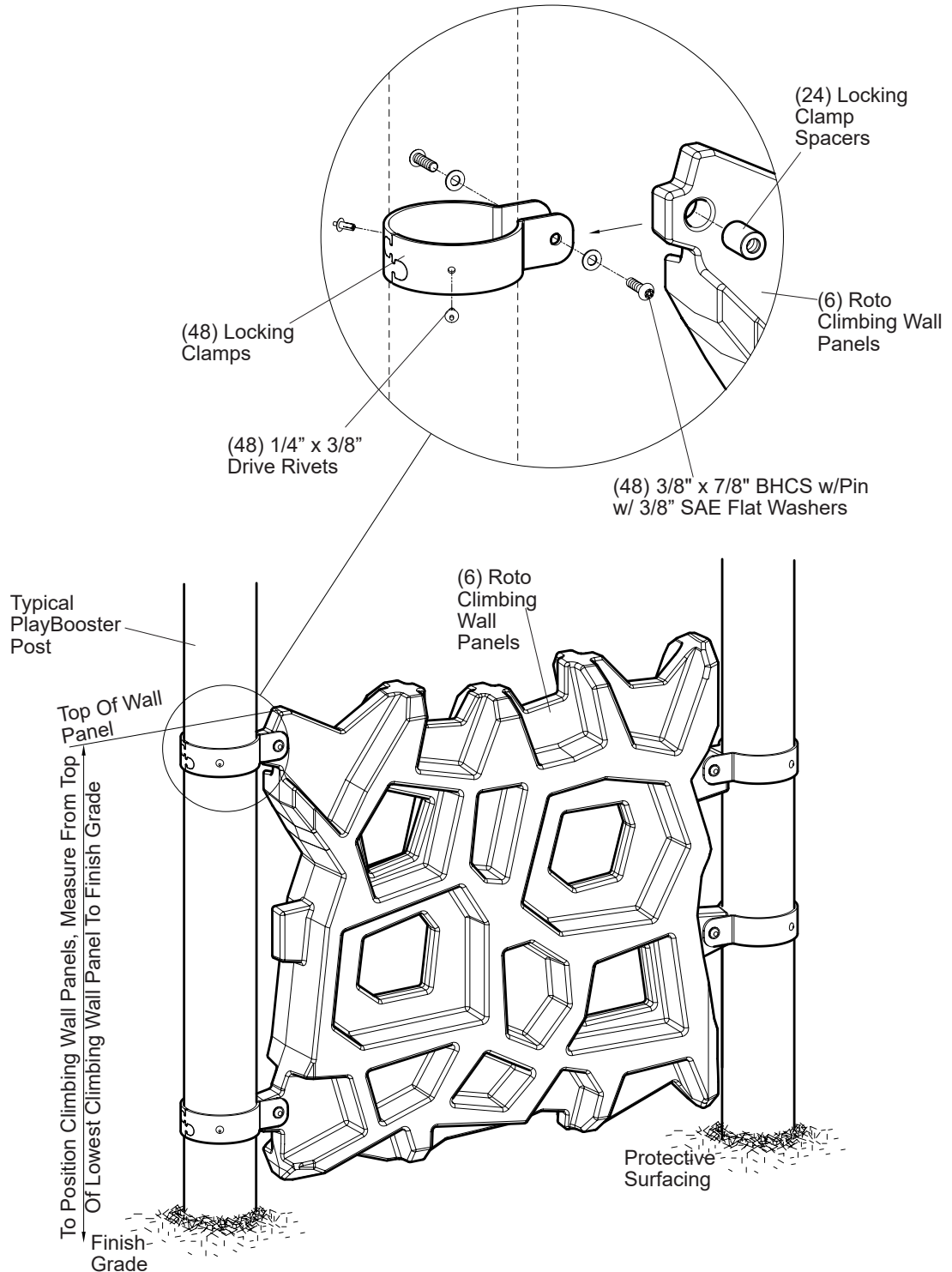
220544 GeoPlex™ Ground-To-Deck Triple Climber, 64" & 72" Decks

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Sheet 4 of 6

DETAIL



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220544 GeoPlex™ Ground-To-Deck Triple Climber, 64" & 72" Decks

Parts List

Part#	Description	Qty.
100611	1/4" x 3/8" Drive Rivet, AL/SST	48
100610	1/4" x 5/8" Drive Rivet, AL/SST	1
105327	5" Half Clamp, Specify Color	1
113729	5" Offset Hanger Clamp, Specify Color.....	1
107703	132" Aluminum Post w/Cap, DB, Specify Color.....	*
107709	140" Aluminum Post w/Cap, DB, Specify Color.....	*
107714	148" Aluminum Post w/Cap, DB, Specify Color.....	*
107700	124" Aluminum Post w/Cap, DB, Specify Color.....	*
107691	108" Aluminum Post w/Cap, DB, Specify Color.....	*
107527	132" Steel Post w/Cap, DB, Specify Color	*
107531	140" Steel Post w/Cap, DB, Specify Color	*
107537	148" Steel Post w/Cap, DB, Specify Color	*
107525	124" Steel Post w/Cap, DB, Specify Color	*
107517	108" Steel Post w/Cap, DB, Specify Color	*
107630	100" Aluminum Post w/Cap, SM, Specify Color.....	*
107635	108" Aluminum Post w/Cap, SM, Specify Color.....	*
107640	116" Aluminum Post w/Cap, SM, Specify Color.....	*
107626	92" Aluminum Post w/Cap, SM, Specify Color.....	*
107620	76" Aluminum Post w/Cap, SM, Specify Color.....	*
107474	100" Steel Post w/Cap, SM, Specify Color.....	*
107481	116" Steel Post w/Cap, SM, Specify Color	*
107477	108" Steel Post w/Cap, SM, Specify Color.....	*
107472	92" Steel Post w/Cap, SM, Specify Color.....	*
107469	76" Steel Post w/Cap, SM, Specify Color.....	*
151072	1 1/8" O.D. x 1 1/8" Spacer, Specify Color	2
170930	Barrier, Specify Color.....	1
218756	Barrier Infil Panel, Specify Color.....	1
215288	Roto Climbing Wall Panel, Specify Color.....	6
218924	Locking Clamp, Specify Color.....	48
170993	Single Barrier w/Infil Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST.....	5
100198	3/8" x 1 1/8" BHCS w/Pin, SST.....	2
100199	3/8" x 2 1/4" BHCS w/Pin, SST.....	2
100203	5/8" x 2 1/4" BHCS w/Pin, SST.....	1
100327	3/8" Standard Hex Nut, SST	2
100351	3/8" Tee Nut, SST.....	2
100353	3/8" Flange Nut w/Pin, SST	5
100365	3/8" SAE Flat Washer, SST.....	9
221222	Roto Molded Wall Hardware Package	6
100196	3/8" x 7/8" BHCS w/Pin, SST.....	48
100365	3/8" SAE Flat Washer, SST.....	48
215287	Locking Clamp Spacer, Aluminum	24
121348	4-Hole SM Hardware Package	3
100266	1/2" x 2 3/4" Expansion Anchor.....	12
100322	1/2" Standard Hex Nut, SST	12
100363	1/2" Flat Washer, SST	12

DB=Direct Bury

SM=Surface Mount

* = Quantity Determined By Your Order

Specification

Posts: See PlayBooster® (PB) General Specifications

Infil Panel: Recycled Permalene®, color specified

Locking Clamp: Fabricated from 7GA. (.179") (4,54 mm) stainless steel. Finish: ProShield®, color specified

Barrier: Weldment comprised of 1.125" (28,57 mm) O.D. 11 GA. (.120") (3,05 mm) steel tube per ASTM A513 with 203 or 303 stainless steel threaded inserts with 5/8" (15,87 mm) internal threads and 1/4" (6,35 mm) tabs. Finish: TenderTuff™, color specified

Specifications are subject to change without notice

Climbing Wall: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified. Wall measures 37" (939 mm) wide x 34" (863 mm) high.

Clamps: Cast aluminum. Finish: ProShield, color specified

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: DB Approx. 10 1/2 labor hours
SM Approx. 9 labor hours

Concrete Req.: DB - Approx. 5.34 cu. ft.

Weight: **64" Deck**

DB 336 lbs. with Aluminum Posts

DB 470 lbs. with Steel Posts

SM 329 lbs. with Aluminum Posts

SM 434 lbs. with Steel Posts

72" Deck

DB 338 lbs. with Aluminum Posts

DB 471 lbs. with Steel Posts

SM 328 lbs. with Aluminum Posts

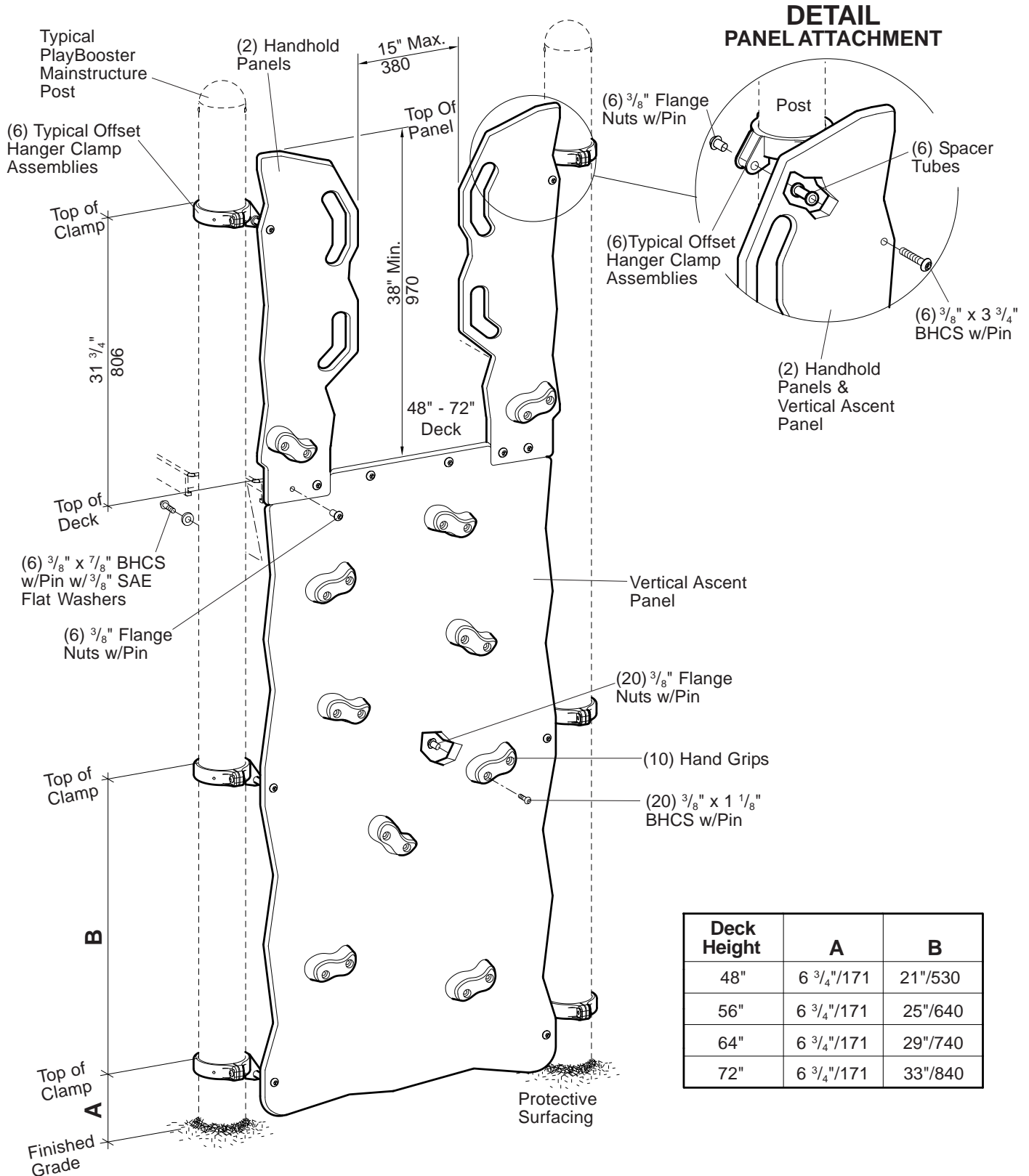
SM 434 lbs. with Steel Posts

Fall Height: 98" (2489 mm) 64" Deck

106" (2692 mm) 72" Deck

Installation Instructions

- (Direct Bury)** Dig footing holes as shown. Refer to the Plan View/Footing Layout.
 - Attach barrier to deck.
 - Attach offset hanger clamp to barrier.
 - Attach offset hanger clamp to post. Refer to the Offset Hanger Clamp Attachment Detail.
 - Attach infil panel to barrier.
 - Attach roto climbing wall panels to posts at height shown. See Detail.
 - Install 1/4" x 5/8" drive rivets in 5" half clamps. Drill through clamp and into 5" post with a 1/4" or "F" (only) drill bit, insert drive rivet in hole through clamp and into post. Hammer drive rivet pin in until flush with head.
 - Install 1/4" x 3/8" drive rivets in locking clamps. Drill through locking clamp and into 5" post with a 1/4" or "F" (only) drill bit, insert drive rivet in hole through clamp and into post. Hammer drive rivet pin in until flush with head.
 - (Direct Bury)** With climber in final position, pour concrete footings. Allow concrete footing to cure a minimum of 72 hours before users are allowed to play on the structure.
- (Surface Mount)** Drill 1/2" x 3" deep holes through post plates using hammer drill and 1/2" masonry bit. Tap expansion anchors into drilled holes. Fasten post plates to expansion anchors, using 1/2" standard hex nuts with 1/2" flat washers.
- Install protective surfacing before users are allowed to play on the structure.



Deck Height	A	B
48"	6 3/4"/171	21"/530
56"	6 3/4"/171	25"/640
64"	6 3/4"/171	29"/740
72"	6 3/4"/171	33"/840

PlayBooster®

145624 Vertical Ascent®, 48"-72"

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Document #18298100

Parts List

Part#	Description	Qty.
182957	Vertical Ascent Handhold Panel, Specify Color.....	2
145597	Vertical Ascent Panel, 48" Deck, Specify Color	1
145596	Vertical Ascent Panel, 56" Deck, Specify Color	1
145595	Vertical Ascent Panel, 64" Deck, Specify Color	1
145585	Vertical Ascent Panel, 72" Deck, Specify Color	1
105327	5" Half Clamp, Specify Color	6
113729	Offset Hanger Clamp, Specify Color	6
113468	Spacer Tube, Specify Color	6
100610	1/4" x 5/8" Drive Rivet, AL/SST	6
145792	Hand Grip Set	1
143110	Hand Grip, Blue	2
143110	Hand Grip, Yellow	2
143110	Hand Grip, Red	3
143110	Hand Grip, Green	3
145616	Vertical Ascent Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	6
100198	3/8" x 1 1/8" BHCS w/Pin, SST	32
100351	3/8" Tee Nut, SST	12
100353	3/8" Flange Nut w/Pin, SST	32
100365	3/8" SAE Flat Washer, SST	6
124460	3/8" x 3 3/4" BHCS w/Pin, SST	6

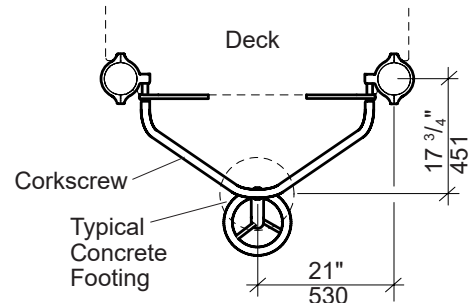
Specifications

Hand Grip:	Made from Polyester Resin. Hand Grips measure approx. 5 3/4" long x 2 1/4" wide x 1 3/4" high.
Panels:	Solid color Permalene®, color specified.
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. Finish: ProShield®, color specified.
Clamps:	Cast aluminum. Finish: ProShield, color specified.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).
Installation Time:	Approx. 2 man hours
Weight:	48" Deck Height - 83 lbs. 56" Deck Height - 91 lbs. 64" Deck Height - 99 lbs. 72" Deck Height - 106 lbs.
Fall Height:	53 1/2"/1358 (48" Deck Height) 61 1/2"/1562 (56" Deck Height) 69 1/2"/1765 (64" Deck Height) 77 1/2"/1968 (72" Deck Height)

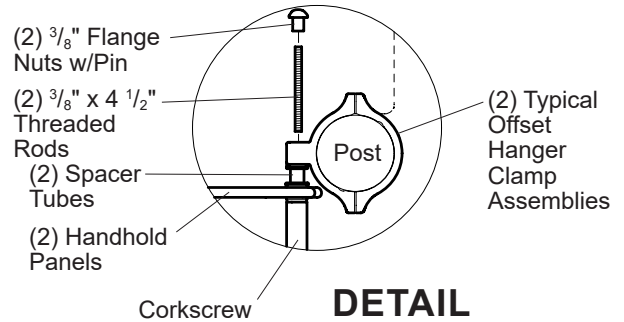
Installation Instructions

- 1) Attach handhold panels and vertical ascent panel to deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin, as shown.
- 2) Attach handhold panels and vertical ascent panel to offset hanger clamps using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. Refer to the Panel Attachment Detail.
- 3) Attach offset hanger clamps to posts at heights shown using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin and 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 4) Attach hand grips to handhold panels and vertical ascent panel using 3/8" x 1 1/8" BHCS w/pin and 3/8" flange nuts w/pin, as shown.
- 5) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.

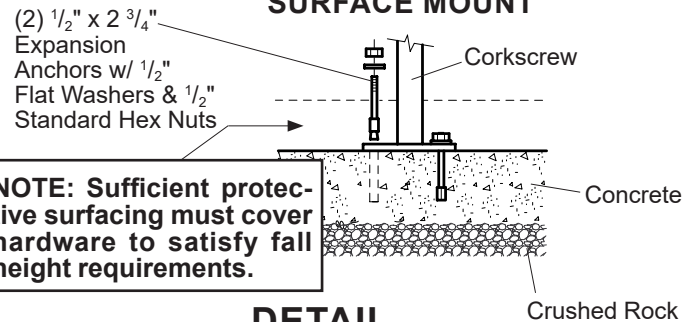
PLAN VIEW/ FOOTING LAYOUT



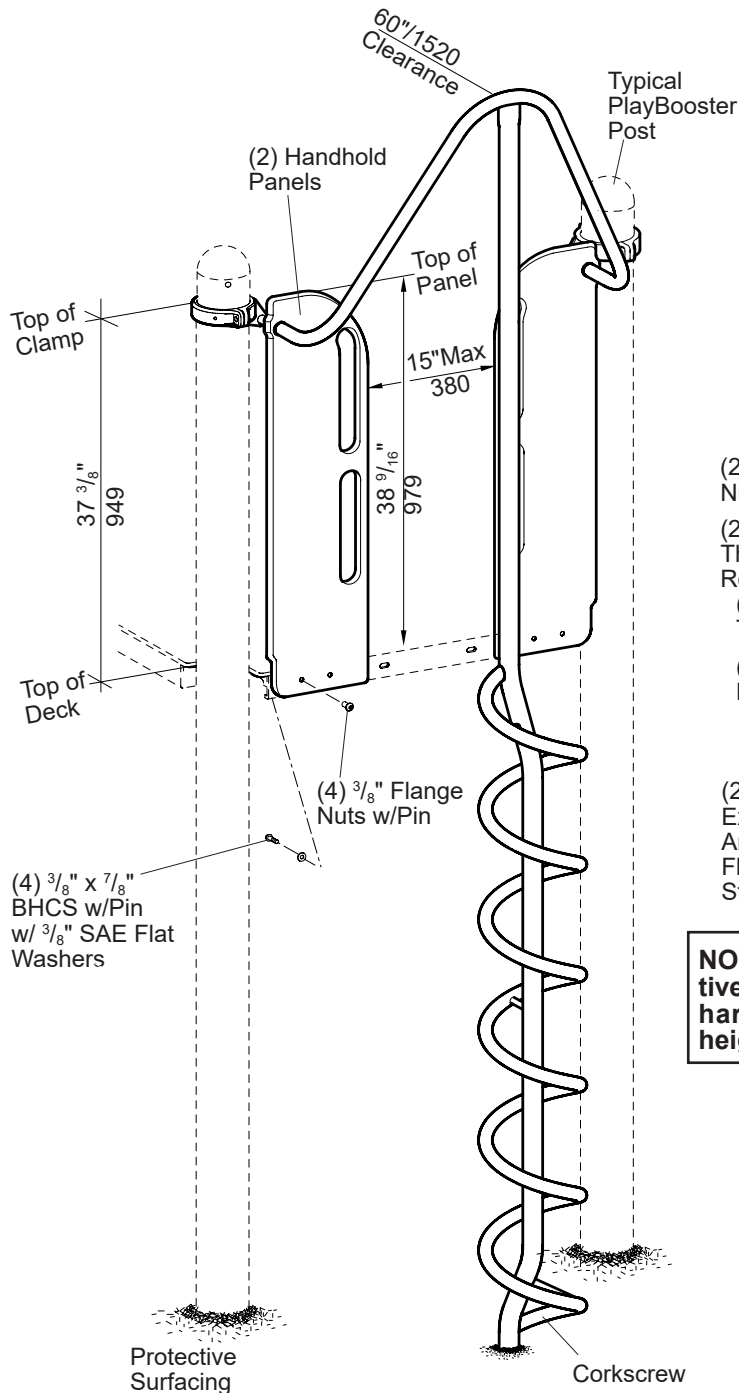
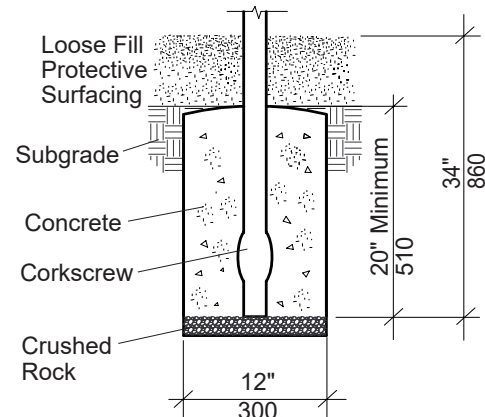
DETAIL HANDHOLD PANEL ATTACHMENT



DETAIL SURFACE MOUNT



DETAIL DIRECT BURY



72" Deck Height Shown

PlayBooster®

148432 Corkscrews, 32"-72" Decks

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Document #14814600

Parts List

Part#	Description	Qty.
147954	Handhold Panel, Specify Color	2
105327	5" Half Clamp, Specify Color	2
113729	Offset Hanger Clamp, Specify Color	2
147941	Corkscrew, 32" Deck (DB), Specify Color	1
147942	Corkscrew, 40" Deck (DB), Specify Color	1
147943	Corkscrew, 48" Deck (DB), Specify Color	1
146511	Corkscrew, 56" Deck (DB), Specify Color	1
146512	Corkscrew, 64" Deck (DB), Specify Color	1
146513	Corkscrew, 72" Deck (DB), Specify Color	1
146514	Corkscrew, 32" Deck (SM), Specify Color	1
146515	Corkscrew, 40" Deck (SM), Specify Color	1
146516	Corkscrew, 48" Deck (SM), Specify Color	1
146517	Corkscrew, 56" Deck (SM), Specify Color	1
146518	Corkscrew, 64" Deck (SM), Specify Color	1
146519	Corkscrew, 72" Deck (SM), Specify Color	1
113468	7/8" O.D. x 1 11/16" Spacer Tube, Specify Color	2
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
148176	Pole Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	6
100365	3/8" SAE Flat Washer, SST	4
148081	3/8" x 4 1/2" Threaded Rod, SST	2
111392	2-Hole (SM) Hardware Package	1
100266	1/2" x 2 3/4" Expansion Anchors	2
100322	1/2" Standard Hex Nut, SST	2
100363	1/2" Flat Washer, SST	2

DB = Direct Bury

SM = Surface Mount

Specification

Corkscrew: Weldment comprised of 1.900" O.D. RS-40 (.120 - .130") galvanized steel tubing, and 1.315" O.D. RS-20 (.080" - .090") galvanized steel tubing. Finish: ProShield®, color specified

Handhold Panel: Solid color Permalene®, color specified

Spacer Tube: Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified

Clamps: Cast aluminum. Finish: ProShield, color specified

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: SM - Approx. 1 1/2 man hours
DB - Approx. 2 man hours

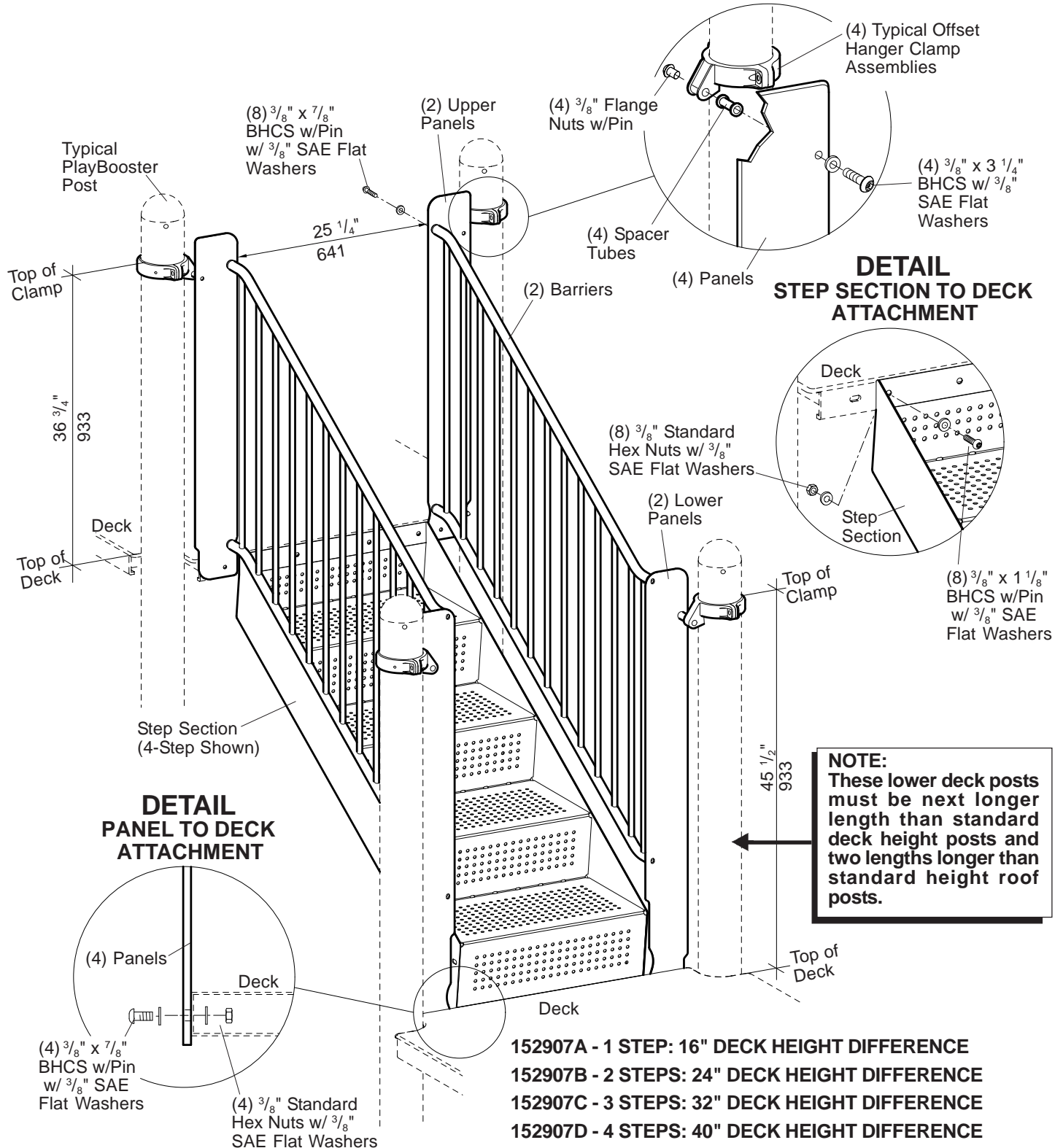
Concrete Req.: Approx. 1.3 cu. ft.
Weight: 67 lbs. (32"-48" Deck)
79 lbs. (56"-72" Deck)

Fall Height: 48" (1220 mm) - (32", 40" & 48" Deck Heights)
72" (1830 mm) - (56", 64" & 72" Deck Heights)

Installation Instructions

- 1) **(Direct Bury)** Dig footing hole as shown. Refer to the Plan View/Footing Layout.
 - 2) Attach offset hanger clamps to posts at heights shown using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin and 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
 - 3) Attach handhold panels to the face of the deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin
 - 4) Attach corkscrew to handhold panels and offset hanger clamps using 3/8" flange nuts w/pin, 3/8" x 4 1/2" threaded rods and spacer tubes. Refer to the Handhold Panel Attachment Detail. **NOTE: Turn 3/8" x 4 1/2" threaded rod into 3/8" flange nut w/pin until it bottoms out, before attaching corkscrew.**
 - 5) **(Direct Bury)** With corkscrew plumb, pour concrete footing. Allow concrete footing to cure a minimum of 72 hours before users are allowed to play on the structure.
- (Surface Mount)** Drill 1/2" x 3" deep holes through support plate using hammer drill and 1/2" masonry bit. Tap expansion anchors into drilled holes. Fasten support plates to expansion anchors using 1/2" standard hex nuts with 1/2" flat washers
- 6) Install protective surfacing before users are allowed to play on the structure.

**DETAIL
PANEL TO CLAMP
ATTACHMENT**



Parts List

Part#	Description	Qty.
144696	1-Step Section, Specify Color	1
144698	2-Step Section, Specify Color	1
144700	3-Step Section, Specify Color	1
144702	4-Step Section, Specify Color	1
144703	1-Step Barrier, Specify Color	2
144705	2-Step Barrier, Specify Color	2
144707	3-Step Barrier, Specify Color	2
144709	4-Step Barrier, Specify Color	2
153896	Lower Panel, Specify Color	2
153895	Upper Panel, Specify Color	2
113468	Spacer Tube, Specify Color	4
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color	4
156283	Deck Link Barr/Hrail Hardware Package	1
100168	3/8" x 3 1/4" BHCS, SST	4
100196	3/8" x 7/8" BHCS w/Pin, SST	12
100198	3/8" x 1 1/8" BHCS w/Pin, SST	16
100327	3/8" Standard Hex Nut, SST	12
100351	3/8" Tee Nut, SST	8
100353	3/8" Flange Nut w/Pin, SST	4
100365	3/8" SAE Flat Washer, SST	36

Specifications

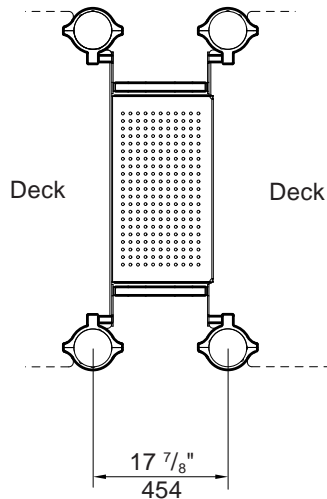
Panels:	Zinc plated 7 GA. (.179") HR flat steel. Finish: ProShield®, color specified.
Step Section:	Formed from 12 GA (.105) sheet steel conforming to ASTM A1011. Standing surface is 24 3/8" wide x 14" deep and is perforated with 5/16" diameter holes. Finish: TenderTuff, color specified.
Barrier:	Weldment comprised of 1.125" O.D. x 11 Ga. (.120" wall) steel tubing, 5/8" O.D. steel bar with 203 or 303 stainless steel inserts with 3/8" internal threads. Finish: TenderTuff, color specified.
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified.
Clamps:	Cast aluminum. Finish: ProShield, color specified.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).
Installation Time:	Approx. 1 1/2 man hours
Weight:	1-Step - 130 lbs. 2-Step - 182 lbs. 3-Step - 236 lbs. 4-Step - 296 lbs.
Fall Height:	Deck Height

Installation Instructions

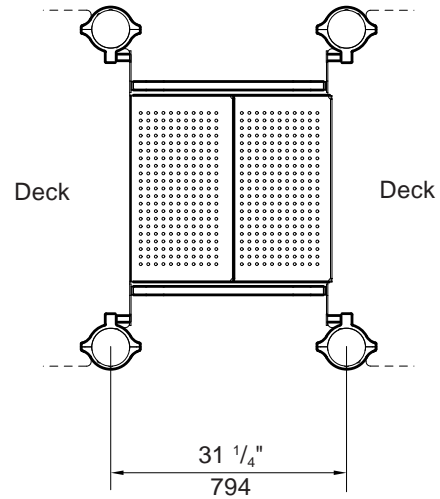
- 1) Attach step section to decks using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers, as shown. Refer to the Step Section To Deck Attachment Detail.
- 2) Attach upper and lower panels to the face of the deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers. Refer to the Panel to Deck Attachment Detail.
- 3) Attach offset hanger clamps to posts at heights shown using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 4) Attach upper and lower panels to offset hanger clamps using 3/8" x 3 1/4" BHCS with 3/8" SAE flat washers, spacer tubes and 3/8" flange nuts w/pin. Refer to the Panel To Clamp Attachment Detail.
- 5) Attach barriers to upper and lower panels using 3/8" x 7/8" BHCS w/pin and 3/8" SAE flat washers, as shown.
- 6) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 7) Install protective surfacing before users are allowed to play on the structure.

PLAN VIEW/FOOTING LAYOUTS

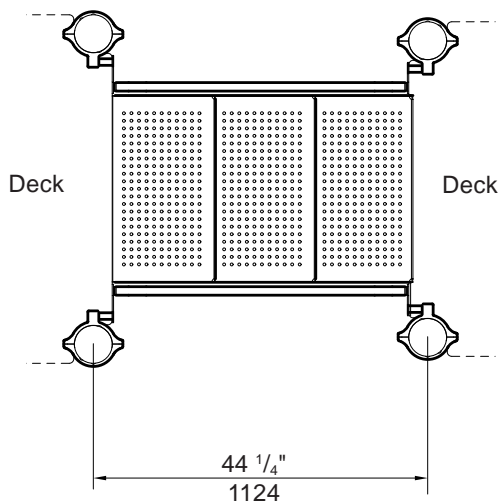
FOOTINGS/ 1-STEP



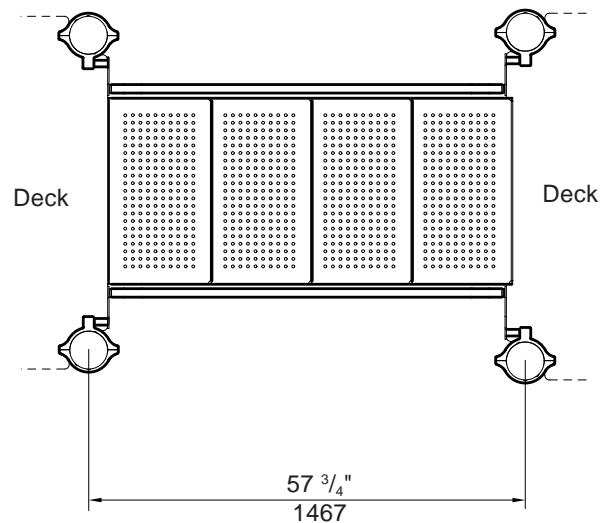
FOOTINGS/ 2-STEP

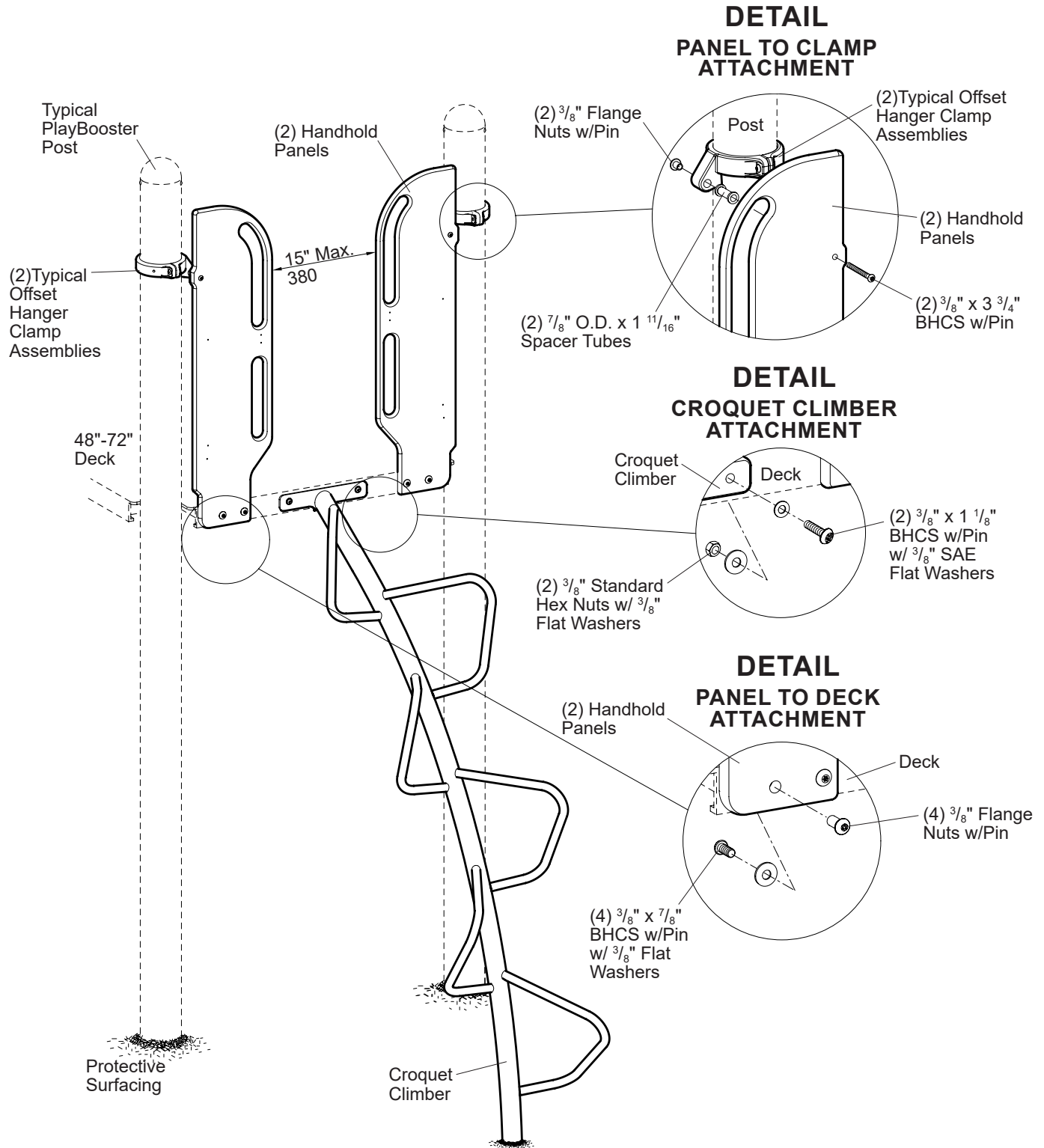


FOOTINGS/ 3-STEP



FOOTINGS/ 4-STEP





PlayBooster® 176077 Croquet Climber, 48"-72" Deck

Sheet 1 of 2

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

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Document #17608200

Parts List

Part#	Description	Qty.
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
105327	5" Half Clamp, Specify Color	2
113468	7/8" O.D. x 1 11/16" Spacer Tube, Specify Color.....	2
113729	5" Offset Hanger Clamp, Specify Color.....	2
139563	Handhold Panel, Specify Color	2
176202	48"-56" Croquet Climber, DB, Specify Color.....	1
175792	64"-72" Croquet Climber, DB, Specify Color.....	1
176111	48" Croquet Climber, SM, Specify Color	1
176112	56" Croquet Climber, SM, Specify Color	1
176113	64" Croquet Climber, SM, Specify Color	1
176114	72" Croquet Climber, SM, Specify Color	1
176385	Croquet Climber Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	6
100327	3/8" Standard Hex Nut, SST	2
100351	3/8" Tee Nut, SST.....	4
100353	3/8" Flange Nut w/Pin, SST	6
100362	3/8" Flat Washers, SST.....	6
100365	3/8" SAE Flat Washers, SST.....	2
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
111392	2-Hole (SM) Hardware Package	1
100266	1/2" x 2 3/4" Expansion Anchors.....	2
100322	1/2" Standard Hex Nut, SST	2
100363	1/2" Flat Washer, SST	2

DB = Direct Bury
SM = Surface Mount

Specification

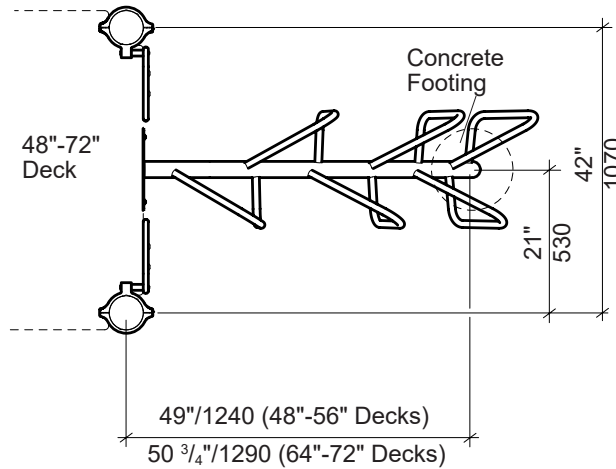
Croquet Climber:	Weldment comprised of 2.375" O.D. RS20 (.095"-.105" wall) galvanized steel tube, 1.029" O.D. RS20 (.070"-.080" wall) galvanized steel tube, and 1/4" HRPO steel sheet. Finish: ProShield®, color specified
Handhold Panel:	Permalene®, color specified
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified
Clamps:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	SM - Approx. 1 1/2 man hours DB - Approx. 2 man hours
Concrete:	DB - Approx. 1.31 cu. ft.
Weight:	DB 65 lbs. (48"-56") DB 68 lbs. (64"-72") SM 57 lbs. (48") SM 58 lbs. (56") SM 63 lbs. (64") SM 64 lbs. (72")
Fall Height:	Deck Height

Installation Instructions

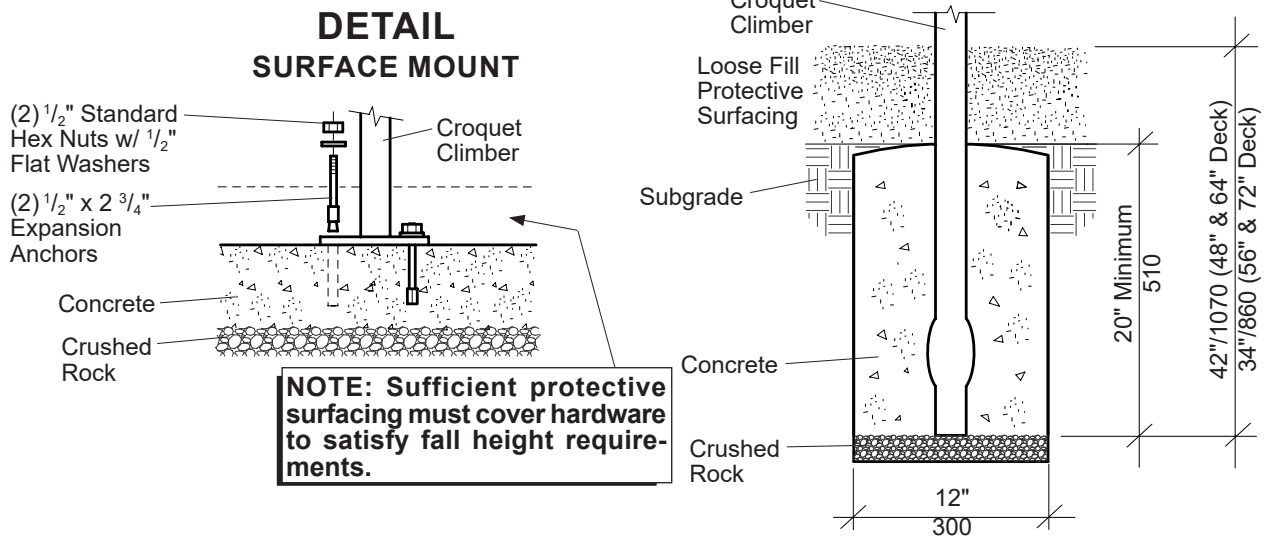
- 1) **(Direct Bury)** Dig footing hole spaced as shown.
- 2) Attach the handhold panels to the face of the deck, using 3/8" x 7/8" BHCS w/pin with 3/8" flat washers and 3/8" flange nuts w/pin
- 3) Attach handhold panels to the offset hanger clamps, using 3/8" x 3 3/4" BHCS w/pin, 7/8" O.D. x 1 11/16" spacer tubes and 3/8" flange nuts w/pin. Refer to the Panel Attachment Detail.
- 4) Attach offset hanger clamps to posts, using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin and 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 5) Attach Croquet climber to deck, using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" flat washers
- 6) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Drill through hole in 5" half clamp and into 5" post with a 1/4" or "F" (only) drill bit, insert drive rivet into hole through clamp and into post. Hammer drive rivet pin in until flush with head. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 7) **(Direct Bury)** With Croquet climber plumb, pour concrete footing. Allow concrete footing to cure for a minimum of 72 hours before users are allowed to play on the structure.

(Surface Mount) With Croquet climber plumb, drill 1/2" x 3" deep holes through mounting plates using hammer drill and 1/2" masonry bit. Tap expansion anchors into drilled holes. Fasten mounting plates to expansion anchors, using 1/2" standard hex nuts with 1/2" flat washers.
- 8) Install protective surfacing before users are allowed to play on the component.

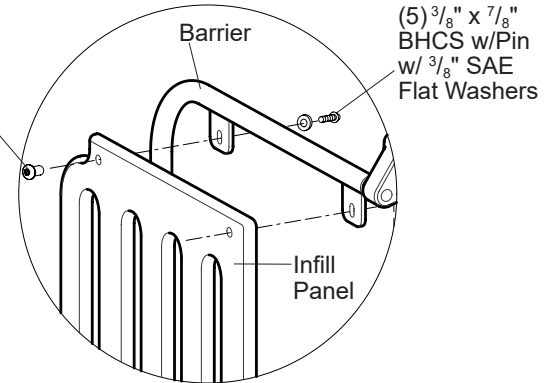
PLAN VIEW/FOOTING LAYOUT



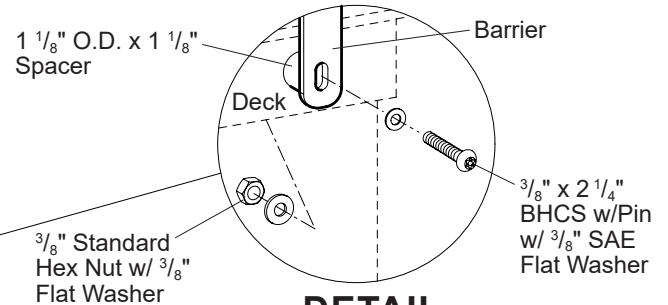
DETAIL DIRECT BURY



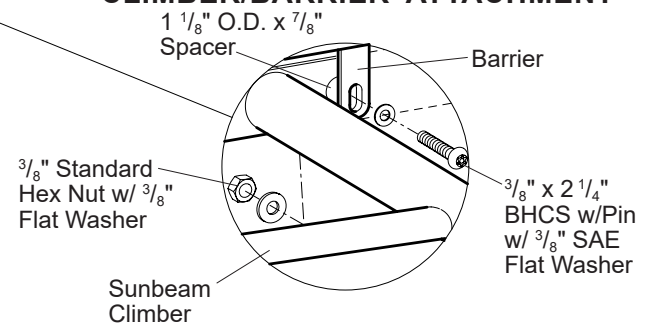
**DETAIL
INFILL PANEL ATTACHMENT**



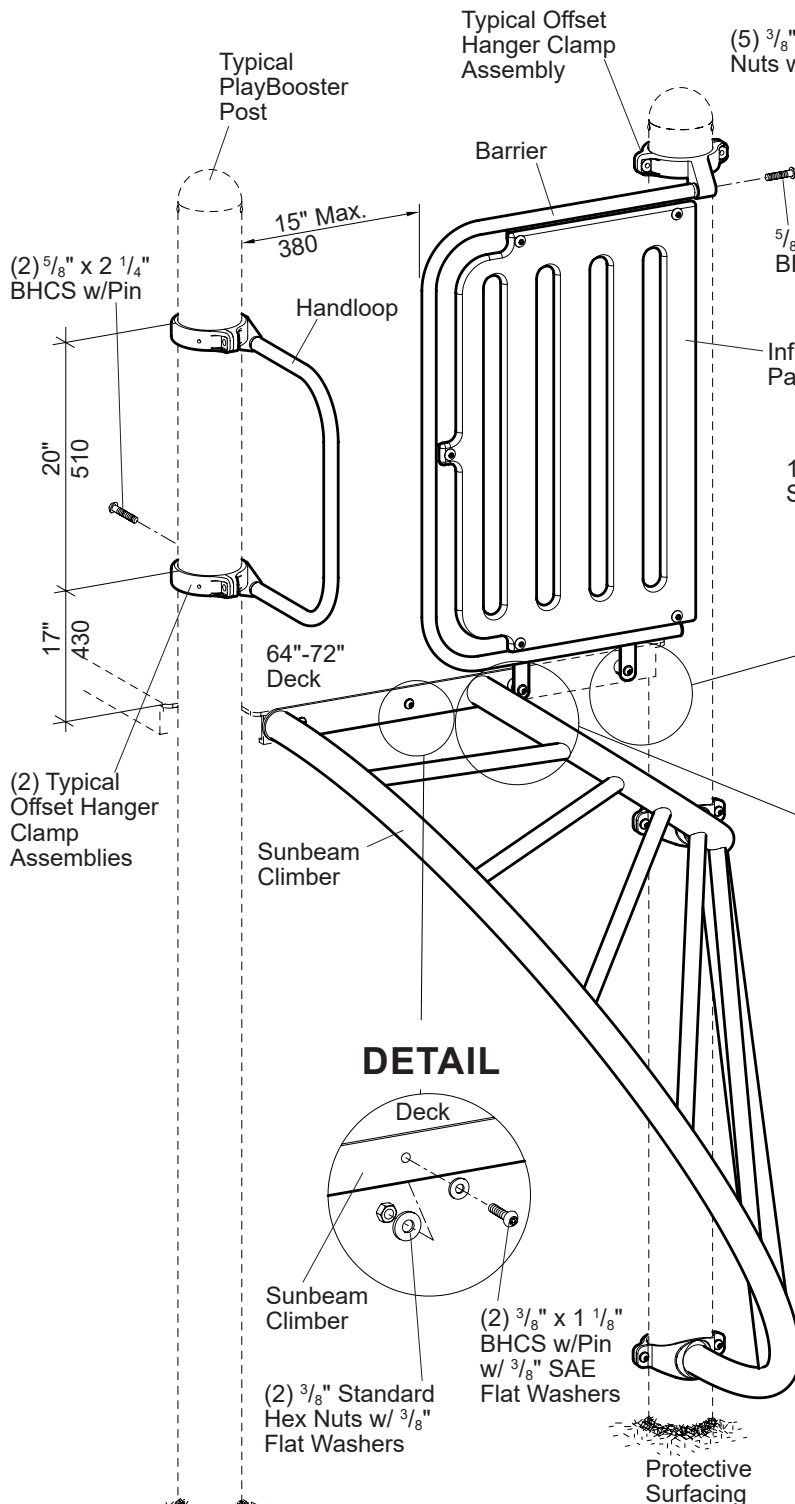
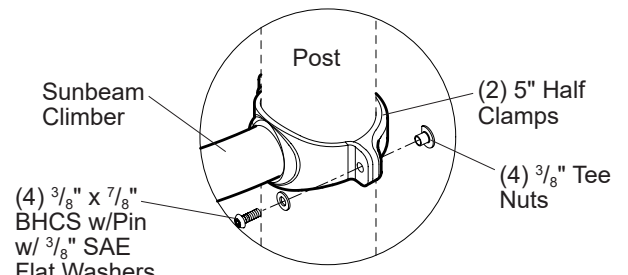
**DETAIL
BARRIER ATTACHMENT**



**DETAIL
CLIMBER/BARRIER ATTACHMENT**



**DETAIL
CLIMBER TO POST ATTACHMENT**



PlayBooster® 176079 Sunbeam Climber, 64\"-72\" Deck

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Document #17608600

Parts List

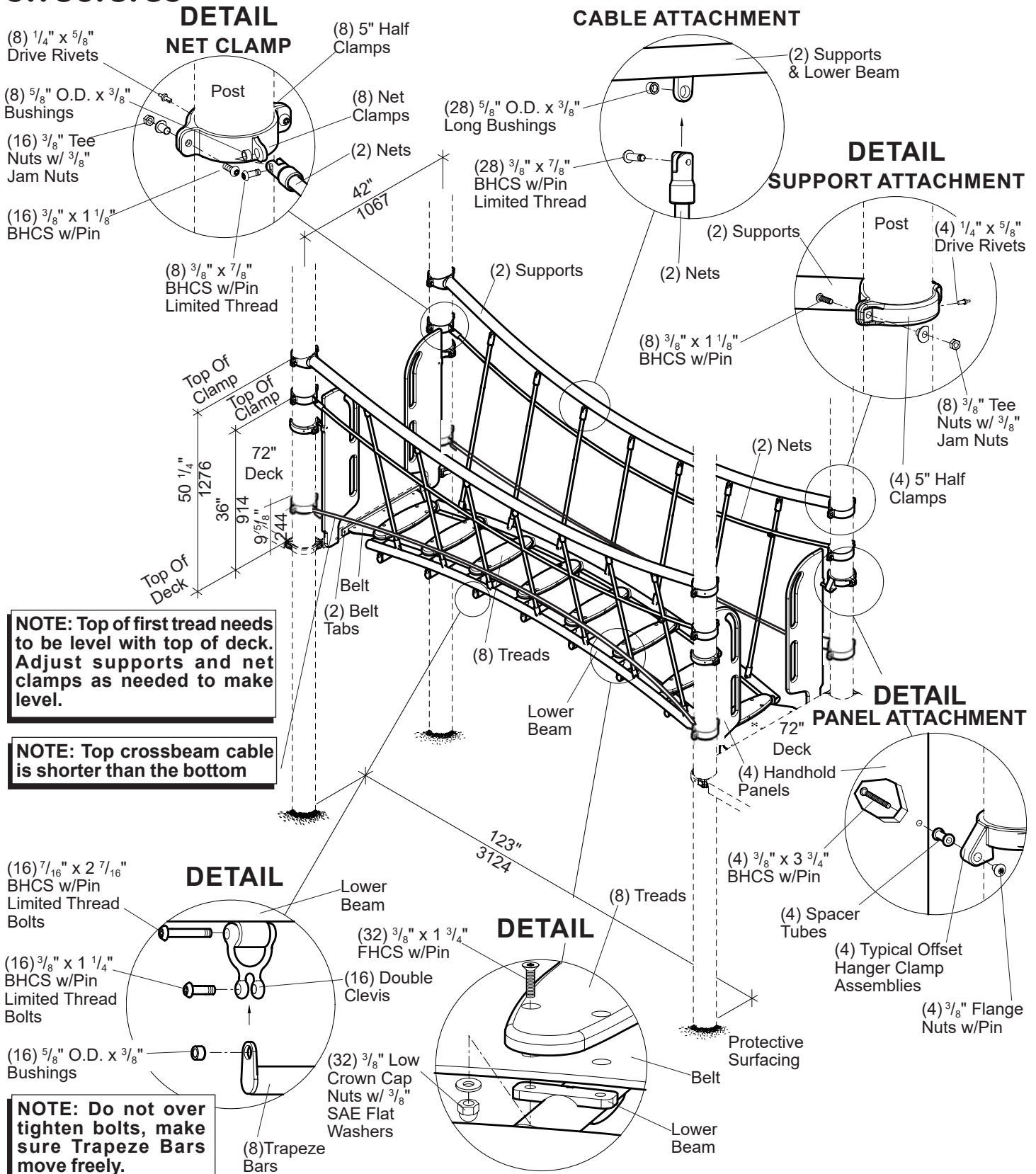
Part#	Description	Qty.
100610	1/4" x 5/8" Drive Rivet, AL/SST	5
105327	5" Half Clamp, Specify Color	5
108542	Handloop, Specify Color	1
113729	5" Offset Hanger Clamp, Specify Color	3
151072	1 1/8" O.D. x 1 1/8" Spacer, Specify Color	1
170930	Barrier, Specify Color	1
170931	Barrier Infil Panel, Specify Color	1
176050	Sunbeam Climber, Specify Color	1
176344	1 1/8" O.D. x 7/8" Spacer, Specify Color	1
176386	Sunbeam Climber Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	9
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100199	3/8" x 2 1/4" BHCS w/Pin, SST	2
100203	5/8" x 2 1/4" BHCS w/Pin, SST	3
100327	3/8" Standard Hex Nut, SST	4
100351	3/8" Mod T-Nut, SST	10
100353	3/8" Flange Nut w/Pin, SST	5
100362	3/8" Flat Washer, SST	4
100365	3/8" SAE Flat Washer, SST	13

Specification

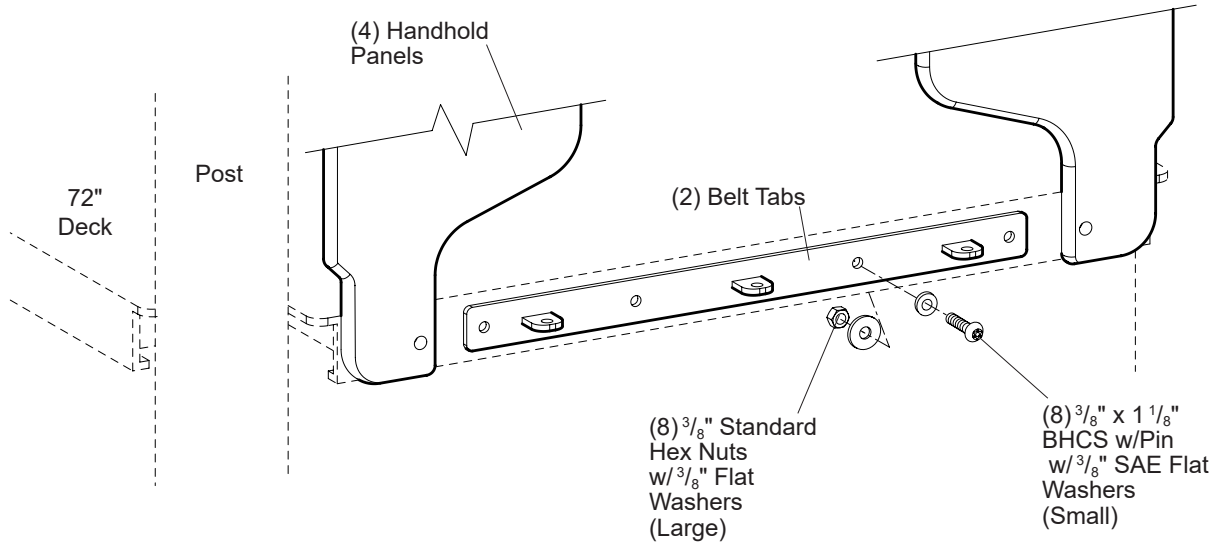
Sunbeam Climber:	Weldment comprised of 1.315" O.D. RS20 (.080"-.090" wall) galvanized steel tube, 2.375" O.D. RS40 (.130"-.140" wall) galvanized steel tube, and 1/4" HRPO steel sheet. Finish: ProShield®, color specified
Barrier:	Weldment comprised of 1.125" O.D. 11 Ga. (.120") steel tube per ASTM A513 with 203 or 303 stainless steel threaded insert with 5/8" internal threads and 1/4" tabs. Finish: TenderTuff™, color specified
Handloop:	Weldment comprised of 1.125" O.D. 11 GA (.120") steel tubing with 203 or 303 stainless steel inserts, with 5/8" internal threads. Finish: TenderTuff, color specified
Infill Panel:	Permalene®, color specified
Clamps:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 1 1/4 man hours
Weight:	118 lbs.
Fall Height:	Deck Height

Installation Instructions

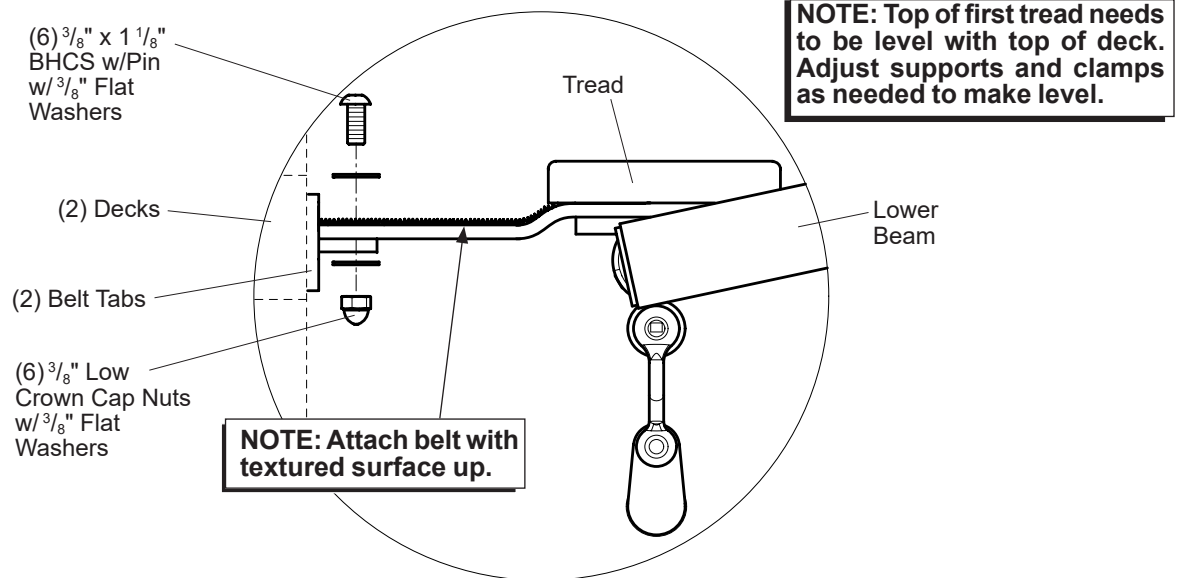
- 1) Attach Sunbeam climber to deck, using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE fla washers and 3/8" standard hex nuts with 3/8" fla washers. Refer to Detail.
- 2) Attach Sunbeam climber to post, using 5" half clamps, 3/8" x 7/8" BHCS w/pin with 3/8" SAE fla washers and 3/8" tee nuts. Refer to Climber To Post Attachment Detail.
- 3) Place 1 1/8" O.D. x 7/8" spacer between barrier tab and Sunbeam Climber. Attach barrier, 1 1/8" O.D. x 7/8" spacer and Sunbeam Climber to deck, using 3/8" x 2 1/4" BHCS w/pin with 3/8" SAE fla washer and 3/8" standard hex nut with 3/8" fla washer. Refer to the Climber/Barrier Attachment Detail.
- 4) Place 1 1/8" O.D. x 1 1/8" spacer between barrier tab and deck. Attach barrier and 1 1/8" O.D. x 1 1/8" spacer to deck, using 3/8" x 2 1/4" BHCS w/pin with 3/8" SAE fla washer and 3/8" standard hex nut with 3/8" fla washer. Refer to the Barrier Attachment Detail.
- 5) Attach barrier to offset hanger clamp, using 5/8" x 2 1/4" BHCS w/pin.
- 6) Attach infil panel to barrier, using 3/8" x 7/8" BHCS w/pin with 3/8" SAE fla washers and 3/8" flang nuts w/pin. Refer to the Infil Panel Attachment Detail.
- 7) Mark locations for clamps on posts per dimensions on front of sheet. Attach offset hanger clamps to posts, using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin and 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Assembly Sheet. Attach handloop to offset hanger clamp assemblies, using 5/8" x 2 1/4" BHCS w/pin.
- 8) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Drill through hole in 5" half clamp and into 5" post with a 1/4" or "F" (only) drill bit, insert drive rivet into hole through clamp and into post. Hammer drive rivet pin in until flus with head. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 9) Install protective surfacing before users are allowed to play on the structure.

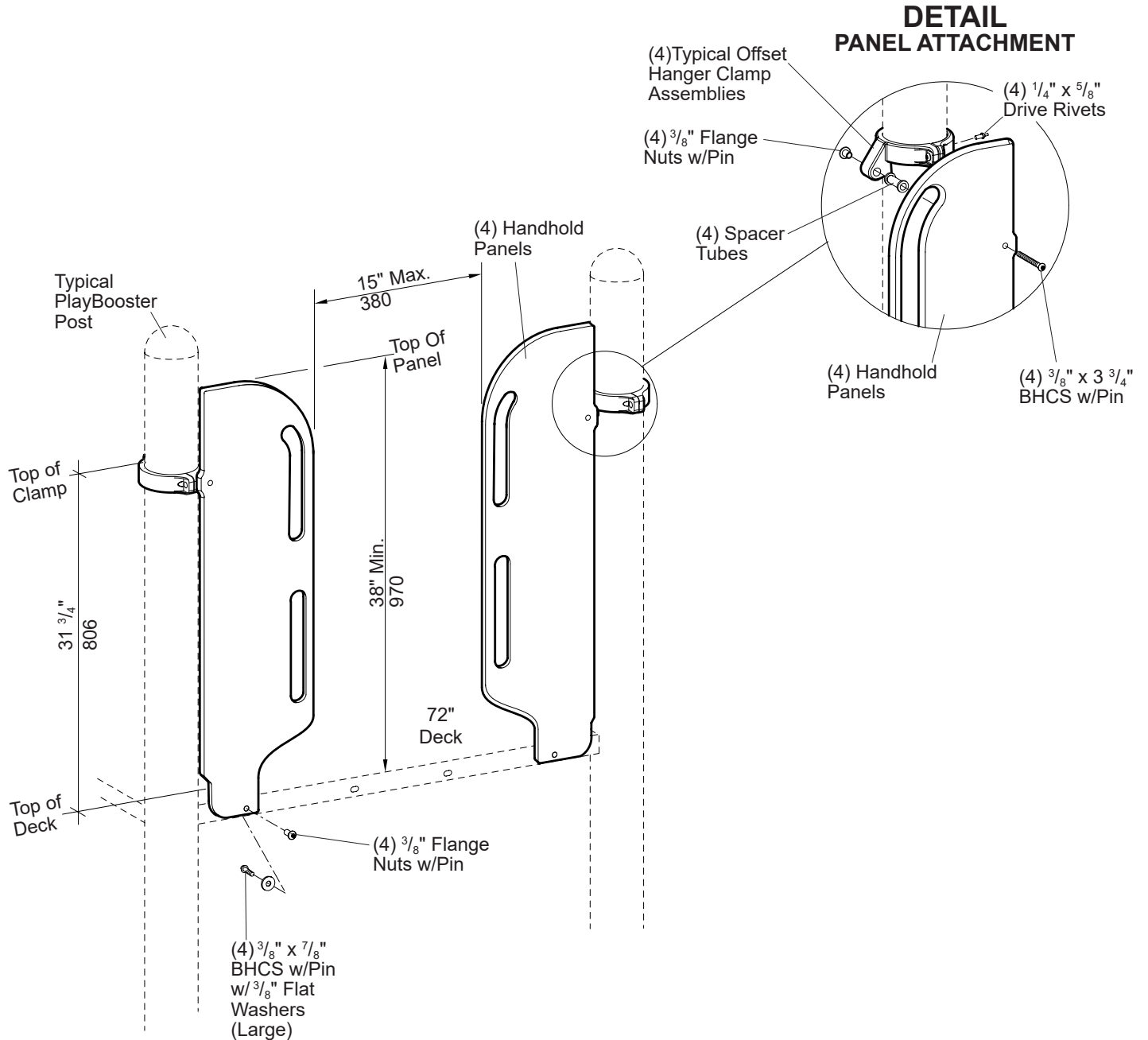


DETAIL BELT TAB ATTACHMENT

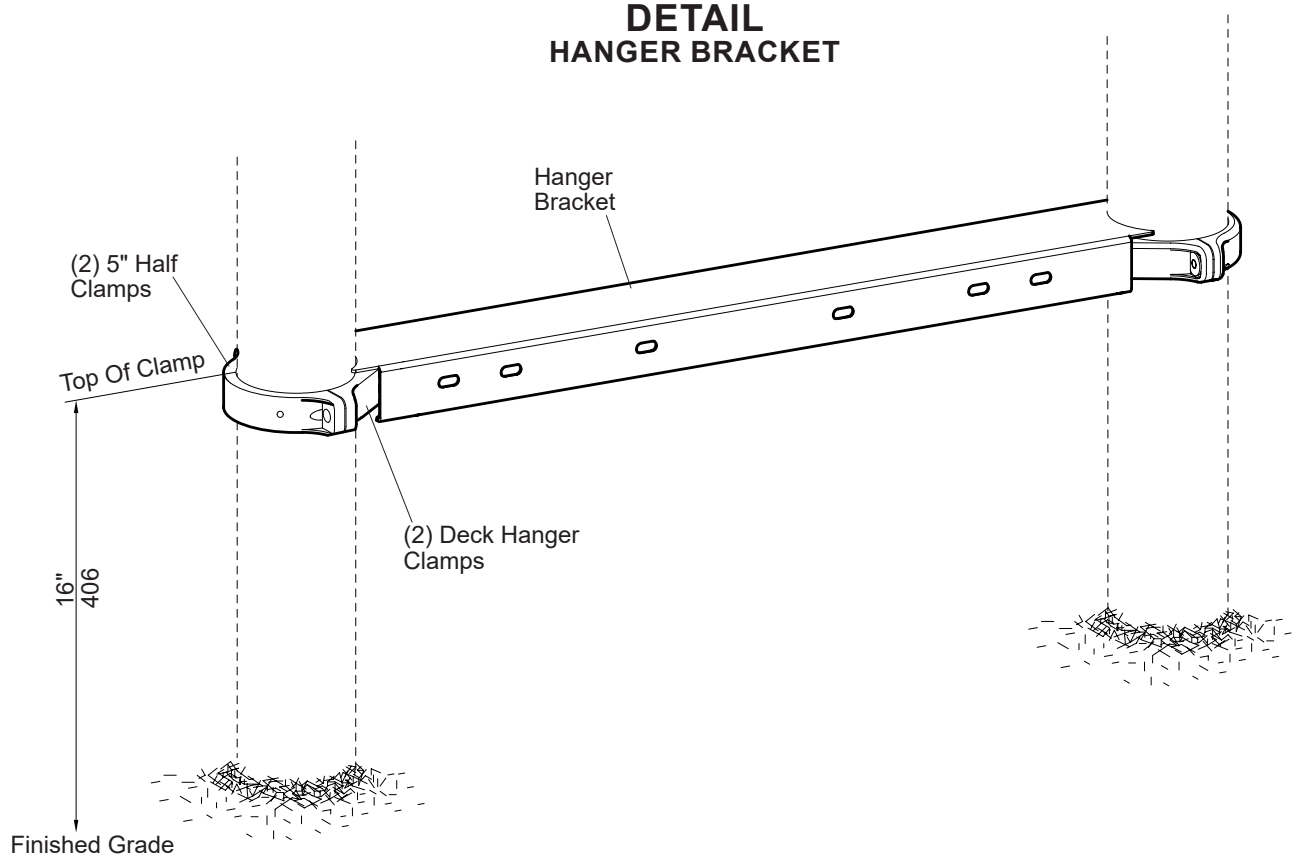


DETAIL BELT ATTACHMENT



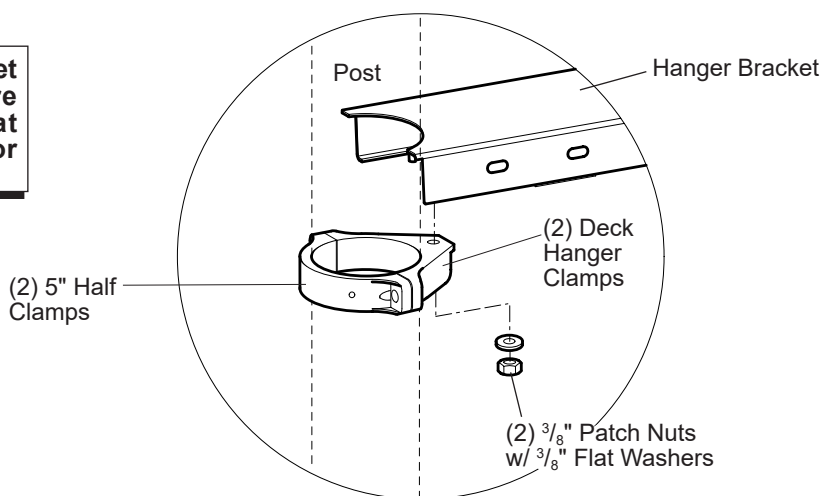


DETAIL HANGER BRACKET



DETAIL HANGER BRACKET ATTACHMENT

NOTE: A hanger bracket is required when there is not a lower deck at the end of the Travelor Climber.



Parts List

Part#	Description	Qty.
100610	1/4" x 5/8" Drive Rivet, AL./SST	16
105327	5" Half Clamp, Specify Color	*
113729	5" Offset Hanger Clamp, Specify Color	4
106022	Deck Hanger Clamp, Specify Color	*
113468	7/8" O.D. x 1 11/16" Tube, AL., Specify Color	4
144476	Handhold Panel, Specify Color	4
161898	Net Clamp, Specify Color	8
190911	Upper Support, Specify Color	2
237898	Net (Cable Assy.), Black, Specify Color	2
218936	Lower Beam, Specify Color	1
195007	Trapeze Bar, Specify Color	8
234001	Traveler Belt, Black	1
201971	Belt Tab, Specify Color	2
202034	GripX Tread, Black	8
184259	Hanger/Transition Bracket, Specify Color	*
242305	Traveler Climber Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	46
100256	3/8" x 1 3/4" FHCS w/Pin, SST	32
100290	3/8" x 7/8" BHCS w/Pin Limited Thread, SST	36
100292	3/8" x 1 1/4" BHCS w/Pin Limited Thread, SST	16
100349	3/8" Low Crown Cap Nut, SST	38
100351	3/8" Tee Nut, SST	32
100353	3/8" Flange Nut w/Pin, SST	8
100327	3/8" Standard Hex Nut, SST	8
100362	3/8" Flat Washer, SST	24
100365	3/8" SAE Flat Washer, SST	40
124460	3/8" x 3 3/4" BHCS w/Pin, SST	4
127068	7/16" x 2.438" BHCS w/Pin Limited Thread, SST	16
127179	5/8" O.D. x 3/8" Long Bushing, SST	52
138917	Double Clevis, SST	16
128296	3/8" Jam Nuts, SST	24
106676	Hanger Bracket Hardware Package	*
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100321	3/8" Hex Patch Nut, SST	2
100351	3/8" Tee Nut, SST	4
100362	3/8" Flat Washer, SST	2
100610	1/4" x 5/8" Drive Rivet, AL/SST	2

* = Quantity Determined By Your Order

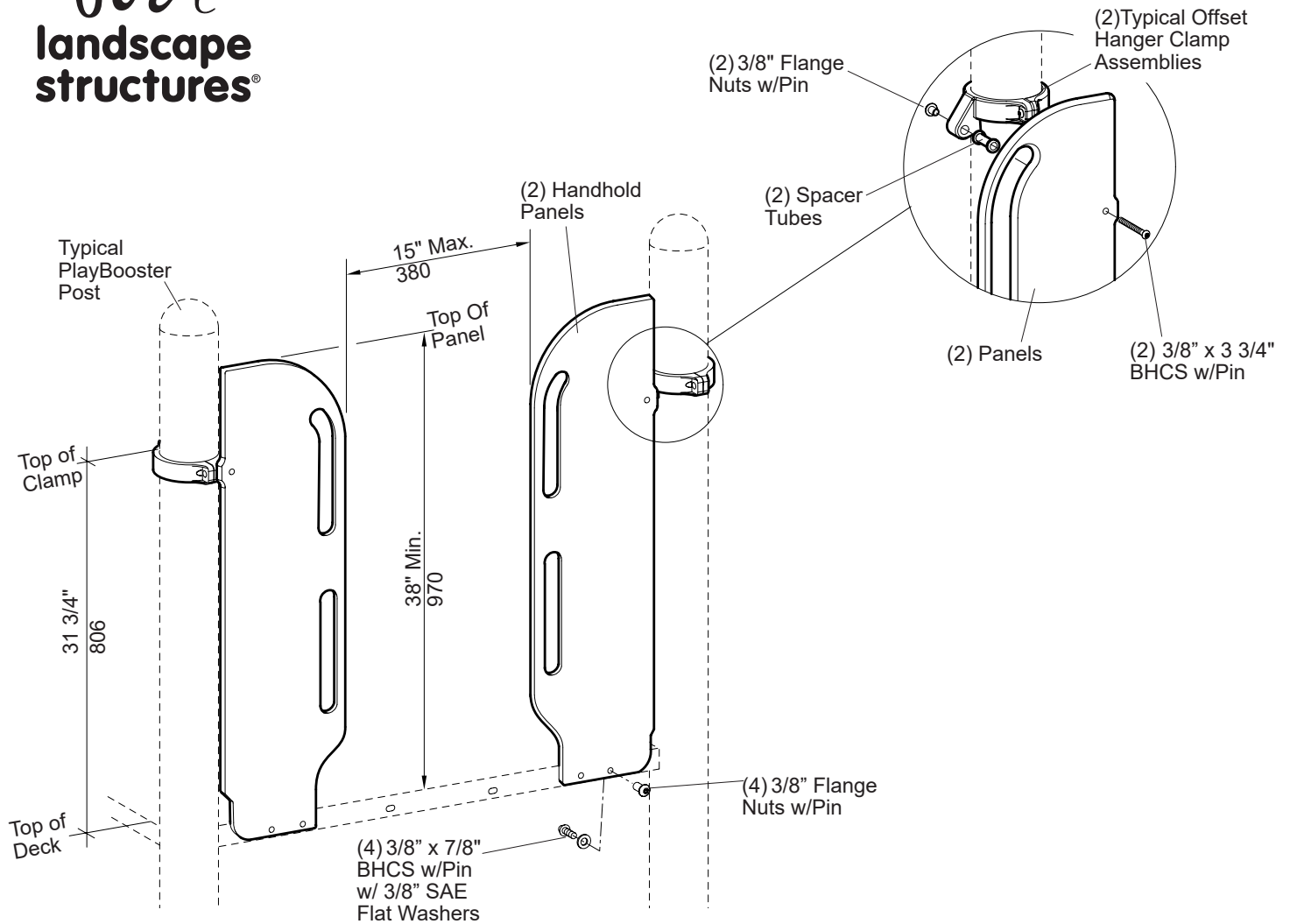
Specification

Lower Beam:	Weldment comprised of 1.900 (48,26 mm) O.D. RS20 (.090"-.100") (2,29 mm-2,54 mm) galvanized steel tubing, 1.315 (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,29 mm) galvanized steel tubing, 7 GA. (.179") (4,55 mm) HRPO steel sheet, 1/8" (3,18 mm) HRPO steel sheet and 3/8" (9,53 mm) thick HRPO steel sheet. SAE 841 dry bronze bushings are pressed into housings at factory. Finish: ProShield®, color specified
Trapeze Bar:	Weldment comprised of 1.315" (33,40 mm) O.D. RS20 (.080"-.090") (2,03 mm-2,29 mm) galvanized steel tubing and 7 GA. (.179") (4,55 mm) HRPO steel sheet. Finish: ProShield, color specified
Cable Assembly:	(Cable) Made of tightly woven polyester-wrapped, six-stranded galvanized-steel cable with a polypropylene core. (Cable Connectors) 6063-T6 aluminum.
Hanger Bracket:	Formed from 11 GA (.120") (3,05 mm) HRPO low carbon sheet steel. Finish: TenderTuff, color specified
GripX Tread:	3/4" (19,05 mm) Thick Permalene®, black in color.
Handhold Panel:	Permalene®, color specified
Support:	Weldment comprised of 2.375" (60,33 mm) O.D. RS40 (.130" - .140") (3,30 mm-3,56 mm) wall galvanized steel tubing, 3/8" (9,53 mm) thick HRPO steel sheet, and 1/4" (6,35 mm) HRPO flat steel. Finish: ProShield, color specified
Belt:	.315" (8,00 mm) Thick mini rough top rubber belting with polyester fabric plys, black in color.
Belt Tab:	Weldment comprised of 3/8" (9,53 mm) thick HRPO steel sheet, and 1/4" (6,35 mm) HRPO flat steel. Finish: ProShield, color specified
Net Clamps:	Weldment comprised of 1/4" (6,35 mm) x 1 3/4" (44,45 mm) HRPO flat steel and .375" (9,53 mm) stainless steel sheet. Finish: ProShield, color specified
Clamp:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 4 1/2 man hours
Area Req:	6' (1,83 m) minimum use zone
Weight:	309 lbs. No Hanger Brackets 330 lbs. w/1 Hanger Brackets 352 lbs. w/2 Hanger Brackets
Max. Fall Height:	79" (2,01 m)

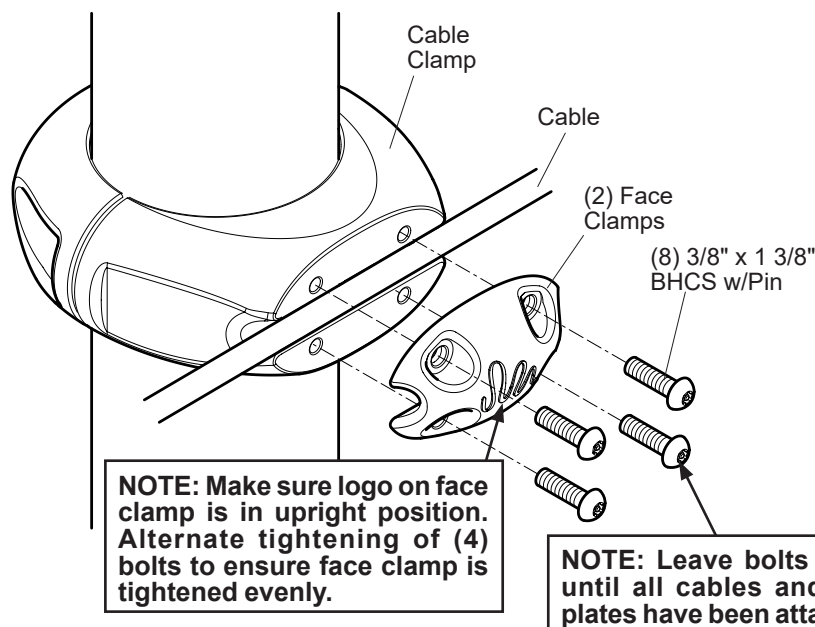
Installation Instructions

- 1) Attach belt tabs and handhold panels to decks. Refer to the Belt Tab Attachment Detail.
- 2) Attach offset hanger clamps to handhold panels. Refer to the Panel Attachment Detail.
- 3) Attach offset hanger clamps to posts, using 5" half clamps and $\frac{3}{8}$ " x 1 $\frac{1}{8}$ " BHCS w/pin with $\frac{3}{8}$ " tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 4) Lay beam on ground with bushings facing up. Position double clevis's over bushings and fasten with $\frac{7}{16}$ " x 2 $\frac{7}{16}$ " BHCS w/pin limited thread bolts. See Detail. **NOTE:** *Do not over tighten bolts.*
- 5) Attach trapeze bars to double clevis's as shown, using bushings and $\frac{3}{8}$ " x 1 $\frac{1}{4}$ " BHCS w/pin limited thread bolt. **NOTE:** *Do not over tighten bolts, make sure trapeze bars move freely.*
- 6) Turn lower beam over. Attach treads and belt to lower beam. Refer to Detail.
- 7) Attach supports and net clamps to posts at height shown. Refer to the Support and Net Clamp Attachment Details.
- 8) Attach nets to clamps and supports. Refer to the Cable and Net Clamp Attachment Details.
- 9) Attach lower beam to nets. Refer to Details. **NOTE:** *Top of first tread needs to be level with top of deck. Adjust supports as needed to make level.*
- 10) Attach belt to belt tabs and lower beam. Refer to the Belt Tab & Belt Attachment Details.
- 11) (If applicable - Hanger Bracket) Mark posts at 16" above finished grade. Attach deck hanger clamps to hanger bracket. Position hanger bracket with deck hanger clamps between posts level with marks. Attach to posts. Refer to the Hanger Bracket Attachment Detail. **NOTE:** *A hanger bracket is required when there is not a lower deck at the end of the Travelor Climber.*
- 12) Install $\frac{1}{4}$ " x $\frac{5}{8}$ " drive rivets in all 5" half clamps. Drill through hole in 5" half clamps and into 5" post with a $\frac{1}{4}$ " or "F" (only) drill bit, insert drive rivet in hole through clamp and into post. Hammer drive rivet pin in until flush with head. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 13) Install protective surfacing before users are allowed to play on the structure.

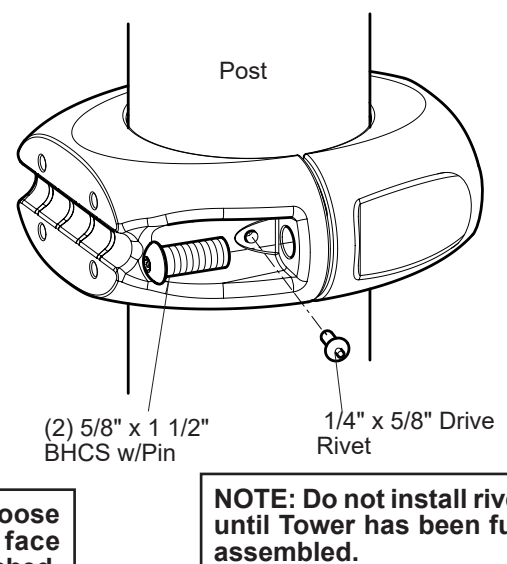
DETAIL PANEL ATTACHMENT



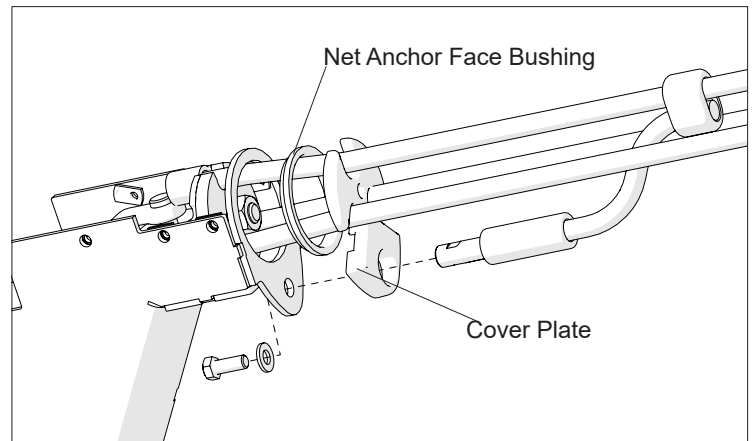
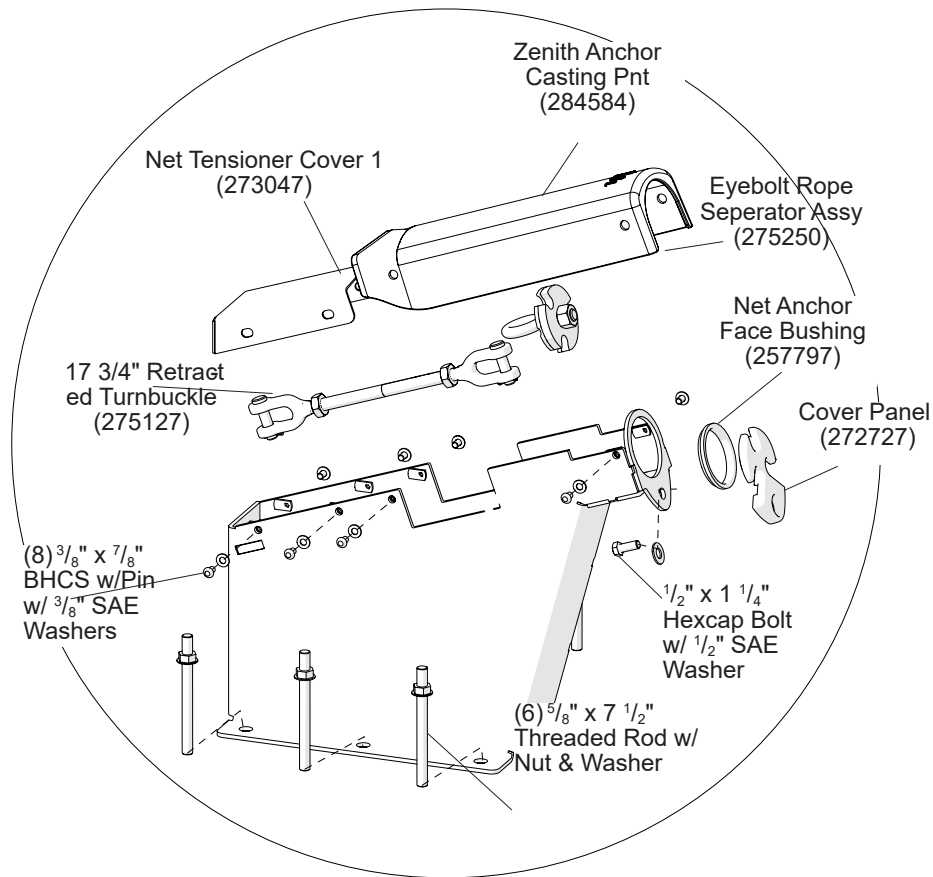
DETAIL FACE CLAMP ATTACHMENT

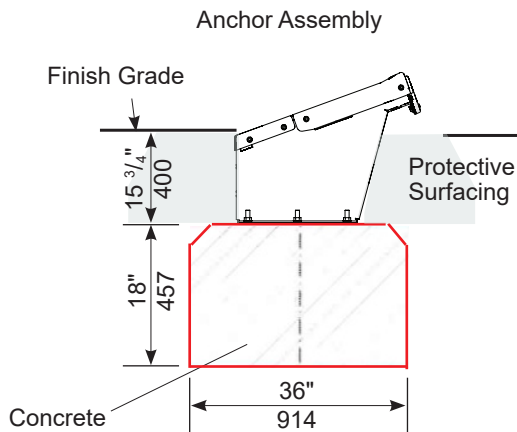


DETAIL TYPICAL CLAMP ATTACHMENT

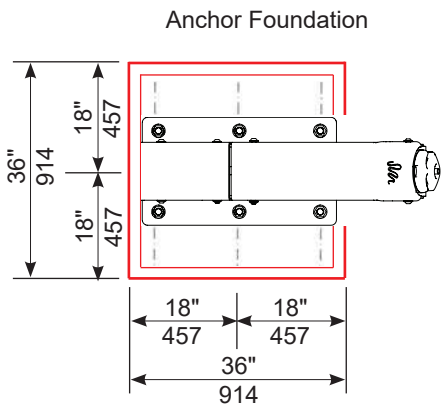


INSTALLING NET





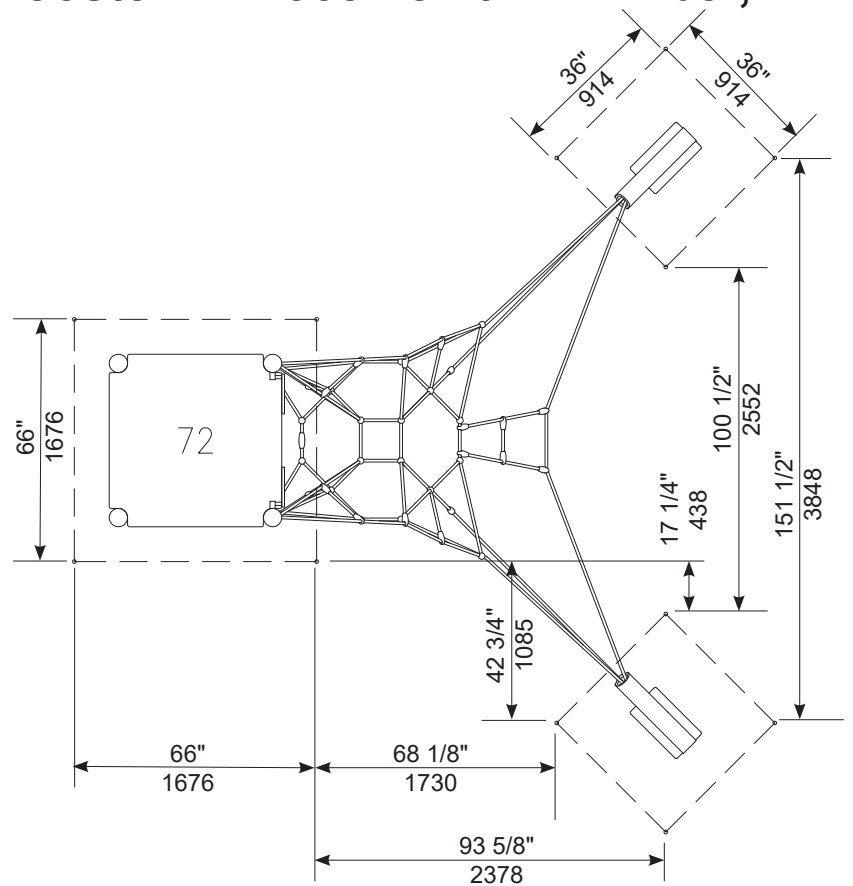
SECTION DRAWING



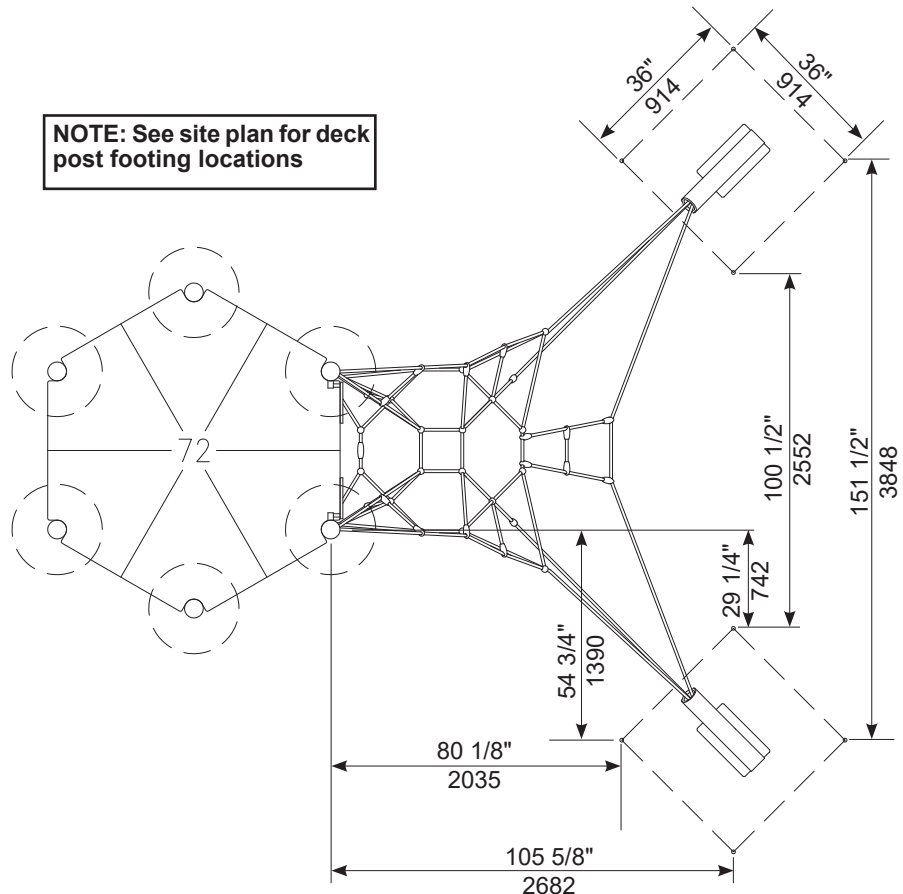
GROUND PLAN

Anchor Foundation

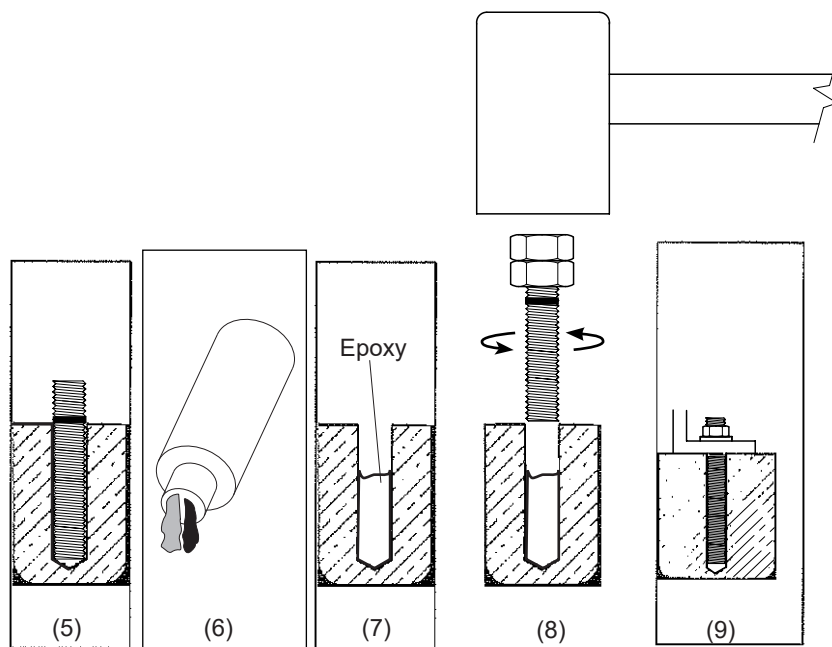
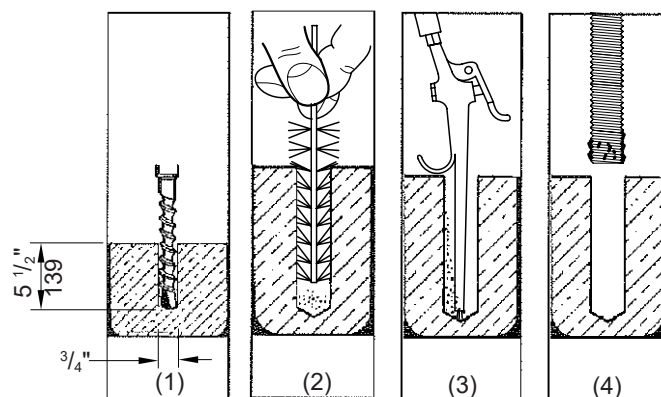
All bottom plates must be centered at foundation block!



NOTE: See site plan for deck post footing locations



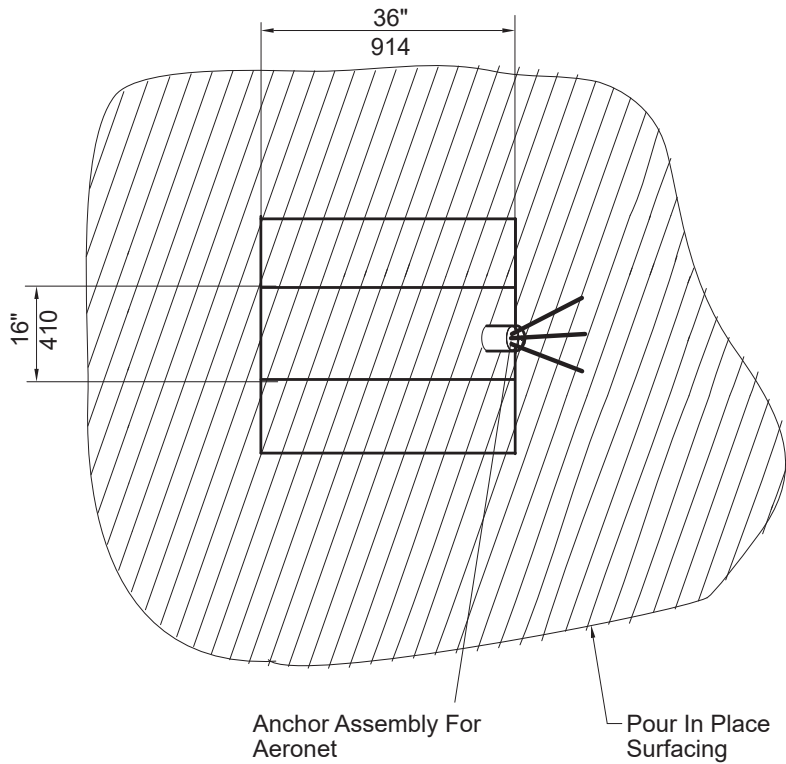
- 1) Surfaces should be clean and free of moisture, grease and oil.
- 2) Mark holes for anchor assemblies.
- 3) Using a $\frac{3}{4}$ " diameter drill bit, drill the holes to a depth of $5\frac{1}{2}$ " - $5\frac{3}{4}$ ". Drill the holes perpendicular to the work surface. To assure full holding power, do not ream the holes or allow the drill to wobble (1). Verify hole depth after drilling.
- 4) Clean the holes using oil free, dry compressed air and a wire or stiff nylon brush. Dust and debris left in holes will significantly reduce the holding capacity of the anchor; several repetitions of brushing and blowing are required to obtain a properly cleaned holes. Compressed air nozzle should reach the bottom of hole. (2 & 3).
- 5) Check hole with threaded rod to verify there is no dust in hole. Repeat wire brush and compressed air if necessary. (4)
- 6) Insert threaded rod in hole and mark rod. (5)
- 7) Cartridge Preparation. Remove the protective cap from the adhesive cartridge and insert the cartridge into the recommended dispensing tool. Before attaching mixing nozzle balance the cartridge by dispensing a small amount of material until both components are flowing evenly (6). Only after the cartridge has been balanced, screw on the proper Wej-It mixing nozzle to the cartridge. Dispense 10 to 12 inches of material from the mixing nozzle into a disposable container according to local regulations and prior to initial injection into the drill hole. The product should be a uniform gray color with no streaks. A new nozzle should be used with each new cartridge.
- 8) Insert epoxy into hole. (7)
- 9) Double nut threaded rod. Fill only one hole at a time, $\frac{2}{3}$ full. Insert rod into the hole while turning 1-2 rotations. Hammer threaded rod to bottom of hole. (8) **NOTE:** A 2 $\frac{1}{2}$ pound mallet may be needed.
- 10) Allow resin to cure for the specified time before loading threaded rods (9).
- 11) Attach anchor assemblies to threaded rod, using $\frac{5}{8}$ " standard hex nuts with $\frac{5}{8}$ " SAE flat washers
- 12) Always wear safety glasses. Use only solid carbide tipped drill bits.



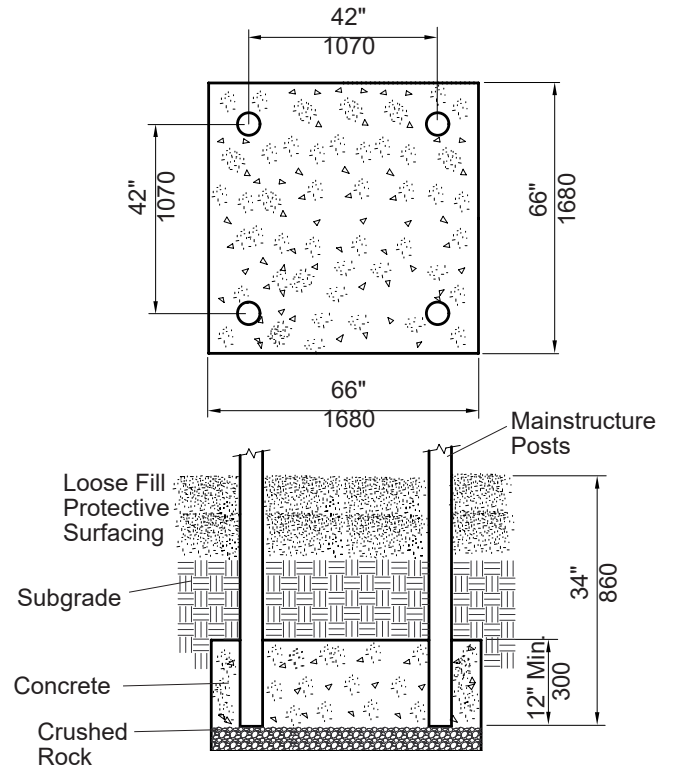
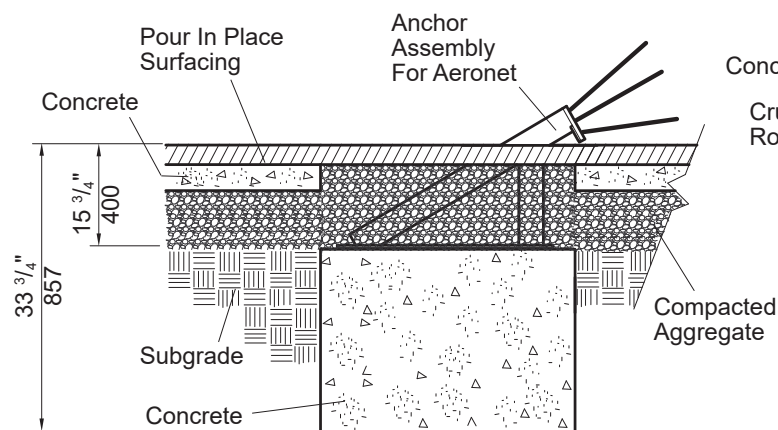
Inject-TITE AW Cure Schedule

Base Material Temperature Range °F (°C)	Working Time	Full Cure Time Dry Concrete	Full Cure Time Damp Concrete
15 (-9)	50 Min.	4 Hr.	8 Hr.
23 (-5)	40 Min.	3 Hr.	6 Hr.
41 (5)	20 Min.	90 Min.	3 Hr.
59 (15)	9 Min.	60 Min.	2 Hr.
77 (25)	5 Min.	30 Min.	60 Min.
95 (35)	3 Min.	20 Min.	40 Min.

PLAN VIEW OF INSTALLATION



Detail Plan For Foundation



NOTE: Refer to the DETAIL PLAN FOR FOUNDATION for footing dimensions.

Part#	Description	Qty.
100610	1/4"X 5/8"Drive Rivet, AL/SST	12
105327	5" Half Clamp, Specify Color	10
113729	5" Offse Hanger Clamp, Specify Color.....	2
113468	Tube 7/8"X 1 11/16"AL, Specify Color.....	2
139563	Handhold Panel, Specify Color	2
161898	Proprietary Net Clamp, Specify Color	8
195922	5" Cable Clamp, Specify Color	2
195942	5" Face Clamp, Specify Color.....	2
195943	5" Back Clamp, Specify Color	2
270436	3D Tube Net Brace, (Sq Deck) Specify Color	4
271828	3D Tube Net Brace, (Hex Deck) Specify Color.....	6
287673	Net Tensioner, SM HDG	2
284584	Zenith Anchor Metallic Silver.....	2
273047	Net Tensioner Cover 1	2
275127	3/4 -10, 17 3/4"Retracted Turnbuckle	2
275250	Eyebolt Rope Sperator Assembly	2
257797	Net Anchor Face Bushing, Metallic Silver.....	2
272727	Cover Panel Aeronet, Metallic Silver.....	2
270011	3D Single Bay Net 72"DK, Specify Color	1
206894	Epoxy Cartridge.....	2
139551	Handhold (Tenderdeck) Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST.....	4
100353	3/8" Flange Nut w/Pin, SST.....	6
100365	3/8" SAE Flat Washer, SST.....	4
275438	Square Deck Brace Hardware Package	1
100198	3/8" x 1 1/8" BHCS w/Pin, SST	16
100349	3/8" Low Crown Cap, SST	16
100365	3/8" SAE Flat Washer, SST.....	32
275441	Hex Deck Brace Hardware Package	1
100198	3/8" x 1 1/8" BHCS w/Pin, SST	24
100349	3/8" Low Crown Cap, SST	24
100365	3/8" SAE Flat Washer, SST.....	48
284601	Net Tensioner Hardware Package	2
100196	3/8" x 7/8" BHCS w/Pin, SST	8
100216	1/2" x 1 1/4" Hex Cap Bolt, SST	1
113550	1/2" SAE Flat Washer, SST.....	1
100365	3/8" SAE Flat Washer, SST.....	12
174022	5/8" x 7 1/2"Threaded Rod w/Nut Washer.....	6
275443	72" Net Climber Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	16
100351	3/8" Tee Nut, SST.....	16
100365	3/8" SAE Flat Washer, SST.....	16
100290	3/8" x 7/8" Limited Thread BHCS w/Pin, SST	8
127179	5/8" x 3/8"Bushing, SST	8
127551	5/8" x 1 1/2"BHCS, SST	4
113027	3/8" x 1 3/8"BHCS w/Pin, SST.....	8
175862	3/4" Justman Tube Brush	1

Specification

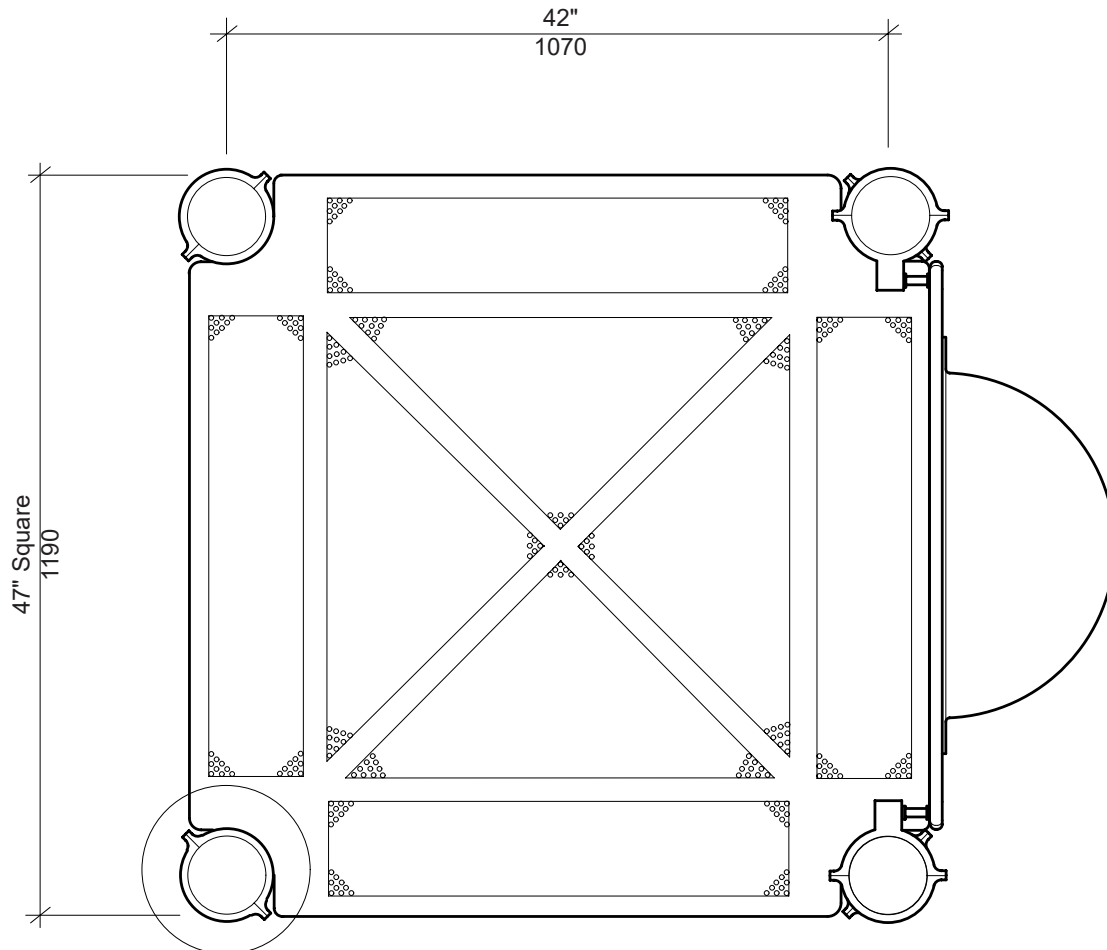
Anchor Assembly:	Weldment comprised of 1/4" HRPO steel plate and 1/2" HRPO steel plate. Finish: Hot Dip Galvanized
Clamps:	Cast aluminum. Finish: ProShield, color specified
Net:	Made of tightly woven, polyester-wrapped, six stranded galvanized-steel cable with a PVC wrapped steel core. 20 mm, steel-core interior rope and 20 mm, steel-core perimeter rope.
Casting cover:	Cast Aluminum. Finish: ProShield, Color specific
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Turnbuckle:	Clevis to Clevis Turnbuckle 3/4-10undthreads with 6" max adjustment. Finish: Forged Galvanized Steel Body.
Anchor Covers:	Comprised of 11ga (.1196) HRPO steel sheet. Finish: Hot Dip Galvanized
Eye Bolt Sperator:	Weldment comprised of 1/4" SST plate, 1/2" SST plate, Eye Bolt Galvanized Steel and 3/4-10 thread SST hex Nut.
Net Clamps:	Weldment comprised of 1/4"(6,35 mm) x 1 3/4"(44,45 mm) HRPO fla steel and 3/8"(9,53 mm) Stainless steel sheet. Finish: ProShield, color specified
Brace:	Weldment comprised of 2.875 OD RS40 (.149-.182 wall) galvanized steel tubing and 1/4x 3" wide steel clamp. Finish: ProShield, color specified
Handhold Panel:	Permalene®, color specific
Installation Time:	Approx. 4 man hours (Square Deck) Approx. 4 man hours (Hex Deck)
Concrete Req.:	Approx. 87.2 cu. ft. (Square Deck) Approx. 131 cu. ft. (Hex Deck)
Weight:	378 lbs. (Square Deck option) 419 lbs. (Hex Deck option)
Fall Height:	Deck Height



Installation Instructions

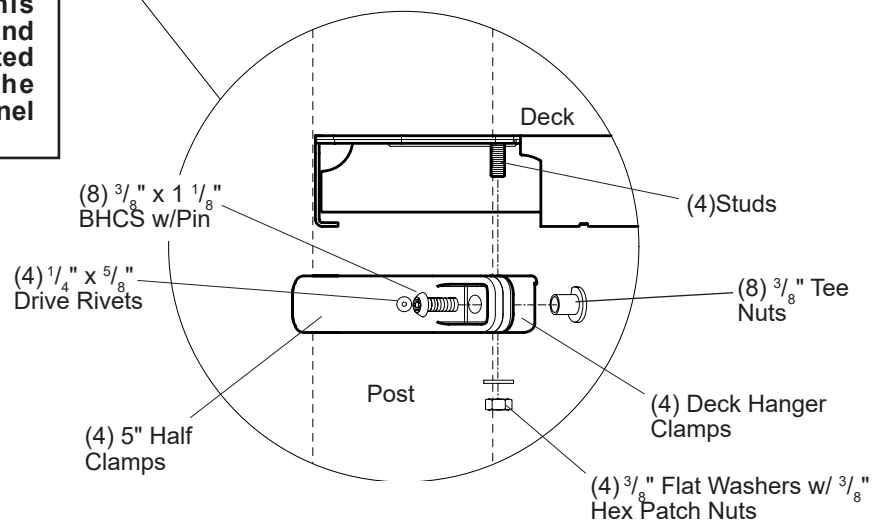
- 1) Dig Footing holes to depth and spacing as shown. (Refer to Deck Configurations **Note:** Allow mainstructure and anchor concrete footings to cure for a minimum of 72 hours before attaching net.
- 2) Attach offset hanger clamp assembly to post at height shown, using 5" half clamp, 3/8 x 1 1/8 BHCS w/pin and 3/8" tee nuts. Refer to clamp attachment detail. **Note:** Angle inwards toward net at approx. 45 degree angle.
- 3) Attach steel net clamps to post at height shown, using 5" half clamps, 3/8" x 7/8" BHCS w/pin, 3/8" SAE flat washer and 3/8" tee nuts. Refer to Clamp attachment detail. **Note:** Angle inwards toward net at approx. 45 degree angle.
- 4) Attach net clamps to post at height shown, using cable clamp, back clamp and 5/8" x 1 1/2" BHCS w/pin. Refer to cable clamp attachment detail. **Note:** Angle inwards toward net at approx. 45 degree angle.
- 5) Attach braces to posts at height shown, using 3/8" x 1 1/8" BHCS w/pins, 3/8" SAE Flat washers and 3/8" low crown hex nuts. Refer to brace attachment detail.
- 6) Attach handhold panels to face of deck, using 3/8" x 7/8" BHCS w/pin, 3/8" SAE Flat washer and 3/8" flange nuts. Refer to Handhold Attachment Detail.
- 7) Attach handhold panel to offset clamps, using spacer tubes, 3/8" x 3/4" BHCS w/pin and 3/8" flange nuts. Refer to Handhold Attachment Detail.

ECO# 0102187 Document 30300100 replaces 28768000 Corrected cover panel part number



**DETAIL
DECK HANGER CLAMP**

NOTE: When using this deck, ALL enclosures and components are mounted on the OUTSIDE of the posts like the bubble panel shown above.



Parts List

Part#	Description	Qty.
145656	Tenderdeck, Specify Color	1
105327	5" Half Clamp, Specify Color	4
106022	5" Deck Hanger Clamp, Specify Color	4
119491	Hardware Package	1
100198	$\frac{3}{8}$ " x 1 $\frac{1}{8}$ " BHCS w/Pin, SST	8
100321	$\frac{3}{8}$ " Hex Patch Nut, SST.....	4
100351	$\frac{3}{8}$ " Tee Nut, SST.....	8
100362	$\frac{3}{8}$ " Flat Washer, SST	4
100610	$\frac{1}{4}$ " x $\frac{5}{8}$ " Drive Rivet, SST	4

Specification

Square Deck: Flange formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is perforated with $\frac{5}{16}$ " diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures 2 $\frac{5}{8}$ " x 47" x 47". Finish: TenderTuff™, color specified

Deck Hanger Clamp Assembly: Cast aluminum. Finish: ProShield®, color specified

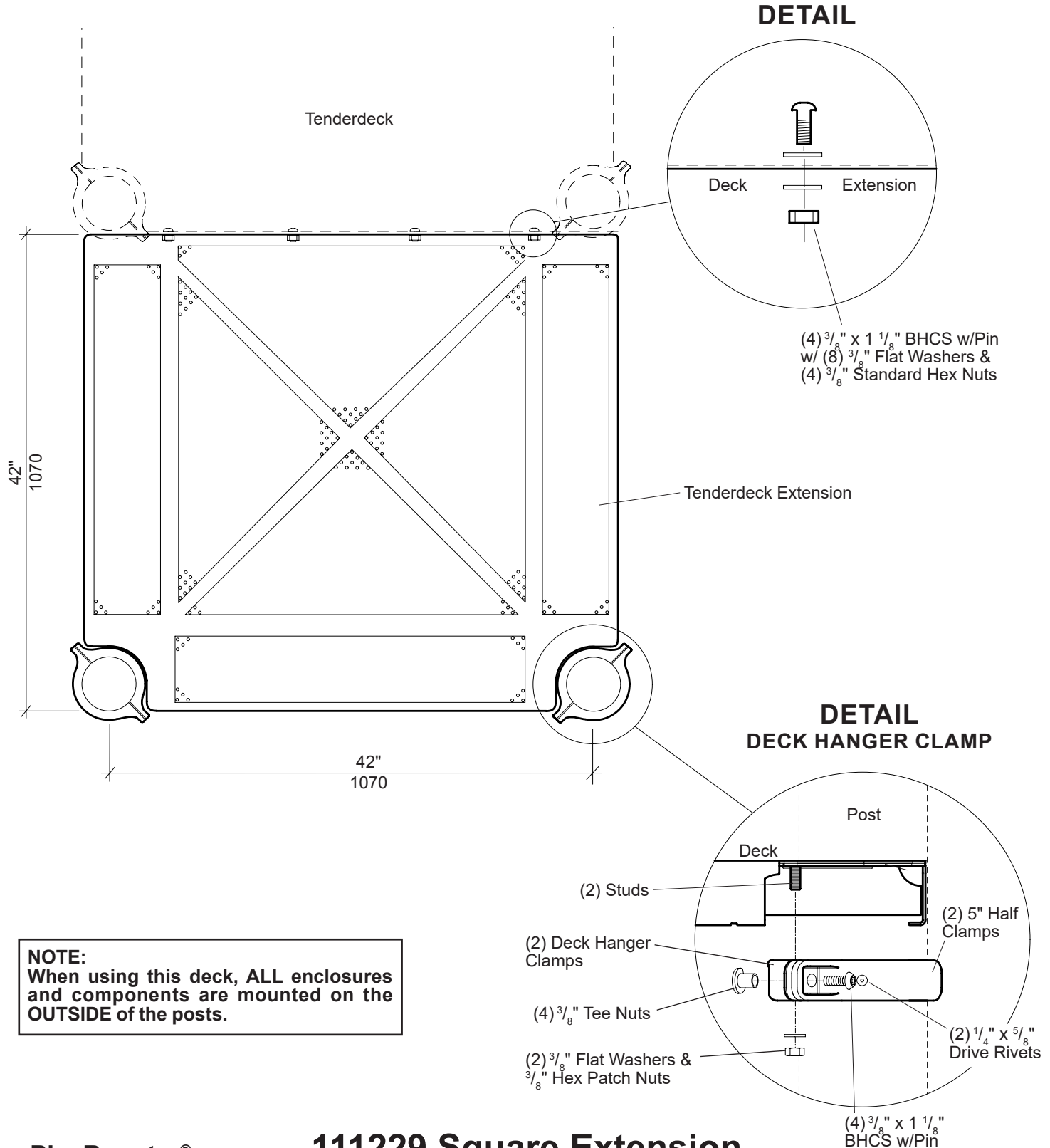
Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: Approx. 1 man hour

Weight: 119 lbs.

Installation Instructions

- 1) Mark posts for the appropriate height of the deck you are installing.
- 2) Fasten hanger clamps to marked position on posts. See Detail on front of sheet.
- 3) Lift deck into position, lining up studs underneath deck with deck hanger clamp as shown. Attach with $\frac{3}{8}$ " flange washers and $\frac{3}{8}$ " hex patch nuts.
- 4) Level deck and plumb posts. Install the drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 5) After all enclosures/components are installed, pour concrete footings per the Typical Concrete Footing Detail Sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.



Parts List

Part#	Description	Qty.
145661	Square Deck Extension, Specify Color	1
105327	5" Half Clamp, Specify Color	2
106022	5" Deck Hanger Clamp, Specify Color	2
106556	Hardware Package	1
100198	$\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/Pin, SST	8
100327	$\frac{3}{8}$ " Standard Hex Nut, SST	4
100351	$\frac{3}{8}$ " Tee Nut, SST.....	4
100362	$\frac{3}{8}$ " Flat Washer, SST	10
100610	$\frac{1}{4}$ " x $\frac{5}{8}$ " Drive Rivet, AL/SST	2
100321	$\frac{3}{8}$ " Hex Patch Nut, SST.....	2

Specification

Square Deck

Extension: Flange formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is perforated with $\frac{5}{16}$ " diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures $2\frac{5}{8}$ " x 42" x 47". Finish: TenderTuff™, color specified

Deck Hanger Clamp Assembly:

Cast aluminum. Finish: ProShield®, color specified

Fasteners:

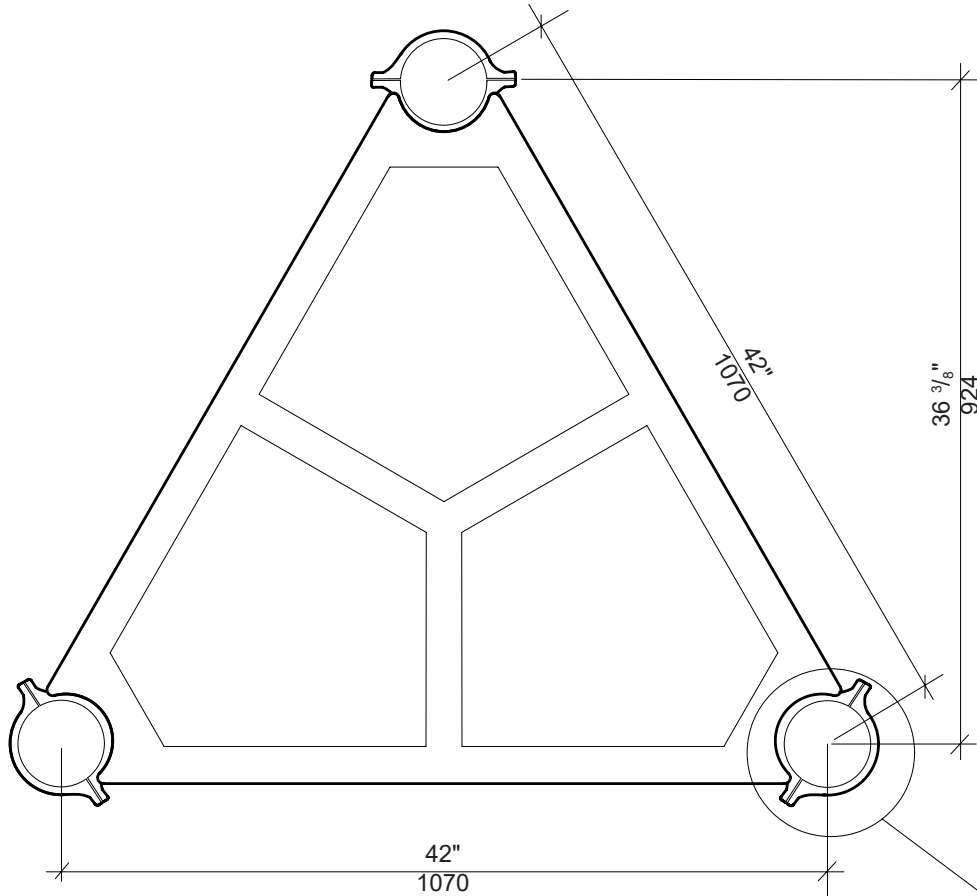
Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: Approx. 1 man hour

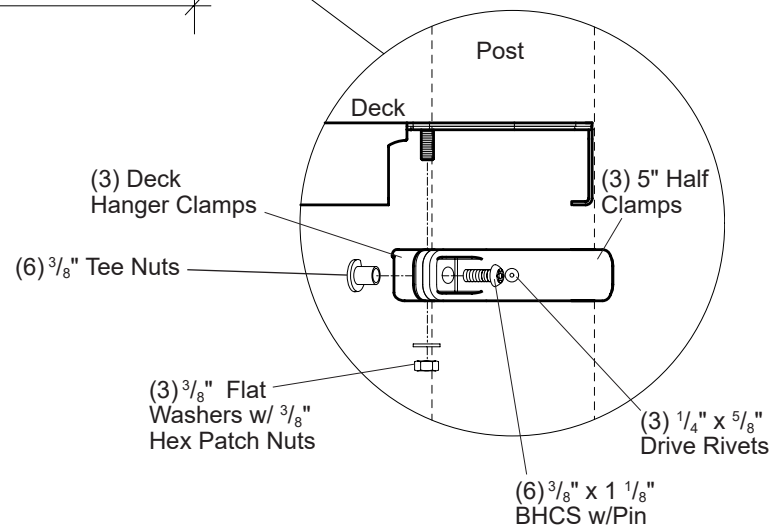
Weight: 106 lbs.

Installation Instructions

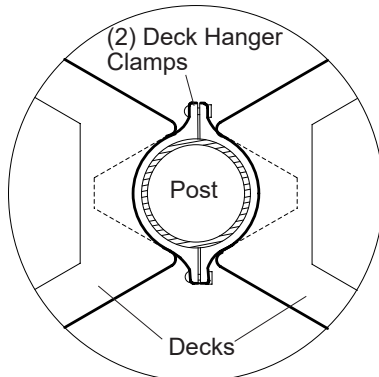
- 1) Mark posts for the appropriate height of the deck you are installing.
- 2) Fasten hanger clamps to marked position on posts. See Detail on front of sheet.
- 3) Lift deck into position, lining up studs underneath deck with deck hanger clamp as shown. Attach with $\frac{3}{8}$ " flat washers and $\frac{3}{8}$ " hex patch nuts.
- 4) Attach extension to tenderdeck using $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin with $\frac{3}{8}$ " flat washers and $\frac{3}{8}$ " standard hex nuts.
- 5) Level deck and plumb posts. Install the $\frac{1}{4}$ " x $\frac{5}{8}$ " drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 6) After all enclosures/components are installed, pour concrete footings per the Typical Concrete Footing Spec Sheet.
- 7) Install protective surfacing before users are allowed to play on the structure.



**DETAIL
DECK HANGER CLAMP**



DETAIL



**Configuration
for Back to Back
Decks at Same
Height.**

Parts List

Part#	Description	Qty.
145657	Tri-Deck, Specify Color.....	1
105327	5" Half Clamp, Specify Color.....	3
106022	Deck Hanger Clamp, Specify Color.....	3
120203	Triangular Deck Hardware Package	1
100198	$\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/Pin, SST.....	6
100321	$\frac{3}{8}$ " Hex Patch Nut, SST.....	3
100351	$\frac{3}{8}$ " Tee Nut, SST.....	6
100362	$\frac{3}{8}$ " Flat Washer, SST.....	3
100610	$\frac{1}{4}$ " x $\frac{5}{8}$ " Drive Rivet, AL/SST.....	3

Specification

Triangular Deck: Flange formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is perforated with $\frac{5}{16}$ " diameter holes. Deck face has (4) slotted holes for face mounting components. The finished size measures $2\frac{5}{8}$ " x $37\frac{3}{4}$ ". Finish: TenderTuff™, color specified

Deck Hanger Clamp Assembly: Cast aluminum. Finish: ProShield®, color specified

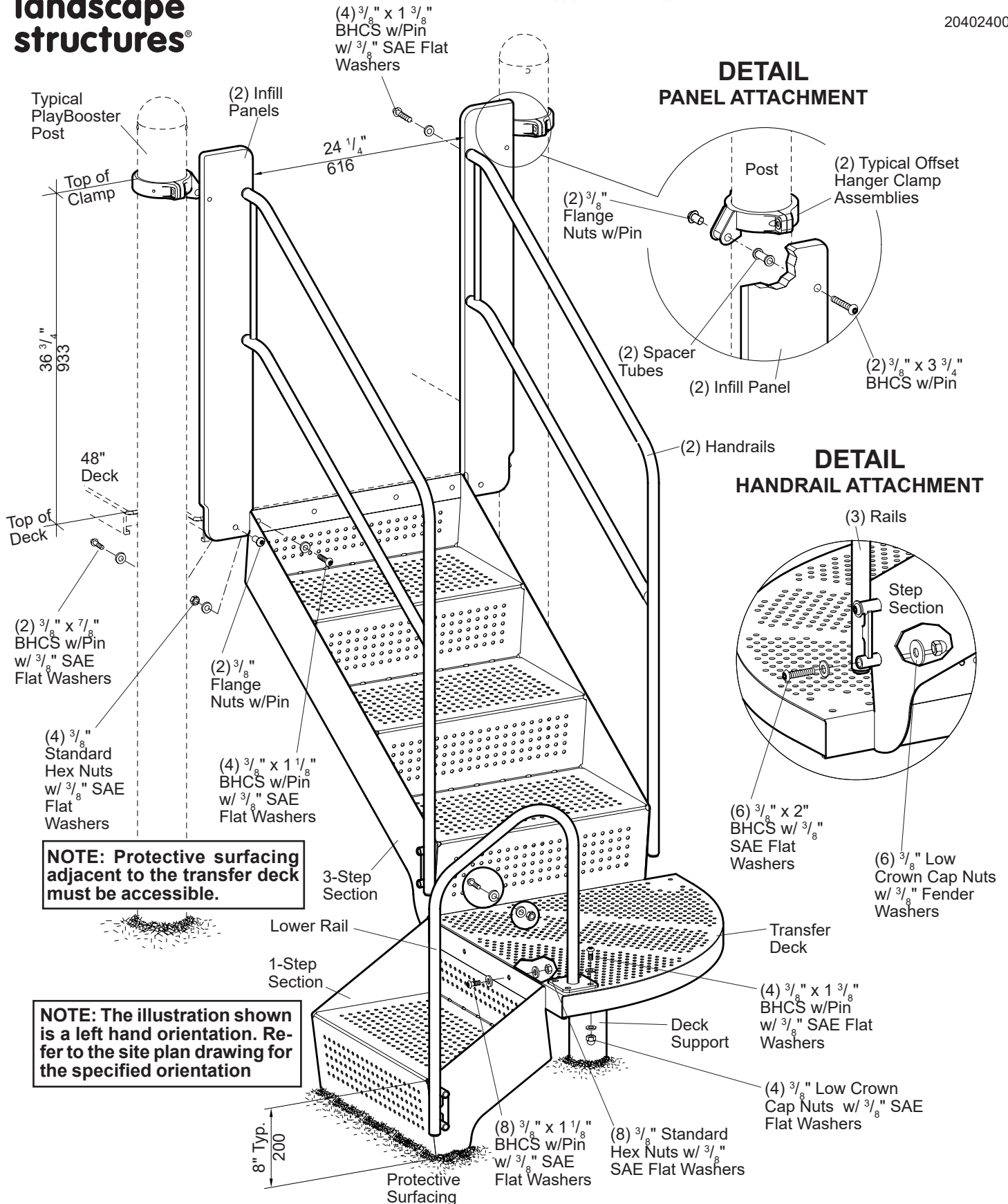
Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: Approx. $\frac{1}{2}$ man hour

Weight: 61 lbs.

Installation Instructions

- 1) Mark posts for the appropriate height of the deck you are installing.
- 2) Fasten deck hanger clamps to marked position on posts. See Detail on the front of this sheet.
- 3) Lift deck assembly into position, lining up stud underneath deck with deck hanger clamp as shown. Attach using $\frac{3}{8}$ " hex patch nuts with $\frac{3}{8}$ " flat washers. With deck level and posts plumb, final tighten all hardware.
- 4) Install $\frac{1}{4}$ " x $\frac{5}{8}$ " drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 5) After attachment of enclosures and components is complete, pour concrete footings. Allow concrete footings to cure a minimum of 72 hours before users are allowed to play on the structure.
- 6) Install protective surfacing before users are allowed to play on the structure.



PlayBooster® 152911 Transfer Module, 48", w/Handrails

Sheet 1 of 2

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

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Document #24445200

Parts List

Part#	Description	Qty.
100610	1/2" x 5/8" Drive Rivet, AL/SST	2
105327	5" Half Clamp, Specify Color	2
113468	7/8" O.D. x 1 1/8" Spacer Tube, Specify Color	2
113729	Offset Hanger Clamp, Specify Color	2
181371	Deck Support (DB), Specify Color	1
181373	Deck Support (SM), Specify Color	1
181374	Step Support (DB), Specify Color	1
181376	Step Support (SM), Specify Color	1
144696	1-Step Section, Specify Color	1
144700	3-Step Section, Specify Color	1
152640	3-Step Handrail, Specify Color	2
152641	Lower Rail, Specify Color	1
153398	Transfer Deck, Specify Color	1
153399	Infill Panel, Specify Color	2
204034	Transfer Module Hardware Package	1
100173	3/8" x 2" BHCS, SST	6
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	20
100327	3/8" Standard Hex Nut, SST	16
100351	3/8" Tee Nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	4
100365	3/8" SAE Flat Washer, SST	54
113027	3/8" x 1 3/8" BHCS w/Pin, SST	8
124460	3/8" x 3 3/8" BHCS w/Pin, SST	2
100378	3/8" Fender Washer, SST	6
100349	3/8" Low Crown Cap Nut, SST	12
111393	4-Hole (SM) Hardware Package	1
100263	3/8" x 2 3/8" Expansion Anchors	4
100327	3/8" Standard Hex Nut, SST	4
100365	3/8" SAE Flat Washers, SST	4
121256	2-Hole (SM) Hardware Package	1
100263	3/8" x 2 3/8" Expansion Anchors	2
100327	3/8" Standard Hex Nut, SST	2
100365	3/8" SAE Flat Washers, SST	2

DB = Direct Bury
SM = Surface Mount

Specification

Deck:	Flange formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" diameter holes and measures 29" per (2) sides. Finish: TenderTuff™, color specified
Railings:	Weldment comprised of formed 1 1/2" O.D. x 11 GA (.120") steel tubing with 203 or 303 stainless steel inserts with 3/8" internal threads. Finish: TenderTuff, color specified
Step Sections:	Formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is 24 3/8" wide x 14" deep and is perforated with 5/16" diameter holes. Finish: TenderTuff, color specified
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield®, color specified
Panel:	Solid color Permalene® panel, color specified.
Deck Support:	Weldment comprised of 3 1/2" O.D. RS20 (.125") galvanized steel tubing and 3/8" O.D. x 5" long rod. Finish: ProShield, color specified
Step Support:	Weldment comprised of 1.660 O.D. RS20 (.080"-.095") and 1 3/4" x 1 3/4" x 1 1/8" HR angle. Finish: ProShield, color specified
Clamps:	Cast aluminum. Finish: ProShield, color specified.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: SM - Approx. 3 man hours
DB - Approx. 4 man hours
Concrete Req.: Approx. 3.4 cu. ft.
Weight: SM - 264 lbs.
DB - 279 lbs.
Fall Height: Deck Height

Installation Instructions

- (Direct Bury)** Dig footings as shown. Refer to your Plan View/Footing Layout.
- Attach the deck support to the transfer deck using 3/8" x 7/8" BHCS w/pin and 3/8" low crown cap nuts with 3/8" SAE flat washers. **NOTE: Make sure 3/8" rod on support is under support strap on deck as shown.** Refer to the Deck Support Attachment Detail.
- Attach the 3-step section to the transfer deck using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers
- Attach the 3-step section to the face of the mainstructure deck using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers
- Attach the step support to the 1 step section using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers. Refer to the Step Support Attachment Detail.
- Attach the 1-step section to the transfer deck using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers
- Attach offset hanger clamps to posts at heights shown using 5" half clamps, 3/8" x 1 1/8" BHCS w/pin and 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- Attach infill panels to the face of the mainstructure deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin
- Attach infill panels to offset hanger clamp assemblies using 3/8" x 3 3/4" BHCS, spacer tubes and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- Attach the handrails to the 3-step section using 3/8" x 2" BHCS with 3/8" SAE flat washers and 3/8" low crown cap nuts with 3/8" fender washers. Refer to the Handrail Attachment Detail.
- Attach the handrails to the infill panels using 3/8" x 1 3/8" BHCS w/pin and 3/8" SAE flat washers
- Attach the lower rail to the transfer deck using 3/8" x 1 3/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" low crown cap nuts with 3/8" SAE flat washers
- Attach the lower rail to the 1-step section using 3/8" x 2" BHCS with 3/8" SAE flat washers and 3/8" low crown cap nuts with 3/8" fender washers. Refer to the Handrail Attachment Detail.
- (Direct Bury)** With transfer deck and steps level and supports plumb, pour concrete footings. Allow concrete footings to cure a minimum of 72 hours before users are allowed to play on the structure.

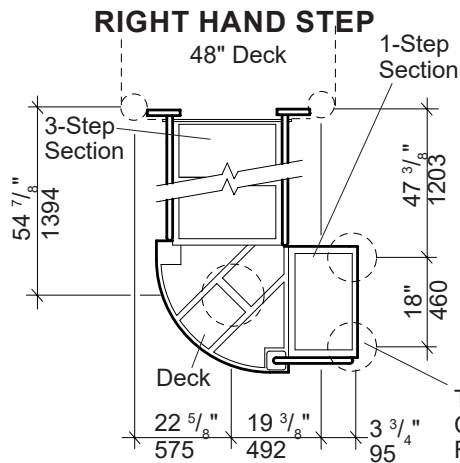
(Surface Mount) Mark holes for expansion anchors on concrete slab through support plates. Detach the module from the mainstructure and slide module aside, drill 3/8" x 3" deep holes on marks using hammer drill and 3/8" masonry bit. Reposition module over drilled holes and tap expansion anchors into drilled holes. Fasten support plates to expansion anchors using 3/8" standard hex nuts with 3/8" SAE flat washers. Reattach module to structure.

NOTE: Refer to the site plan drawing for proper orientation.

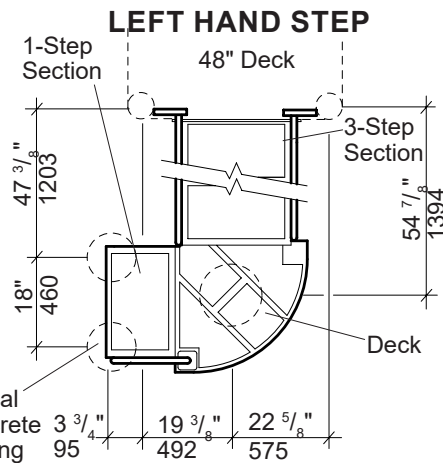
SAFETY NOTE
Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)

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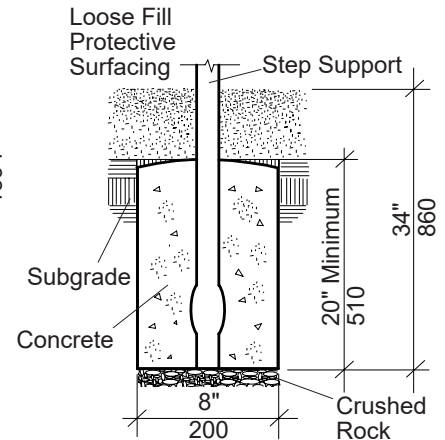
**PLAN VIEW
FOOTING LAYOUT**



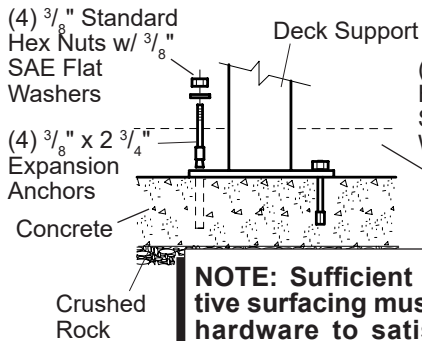
**PLAN VIEW
FOOTING LAYOUT**



**DETAIL
STEP SUPPORT BURY**

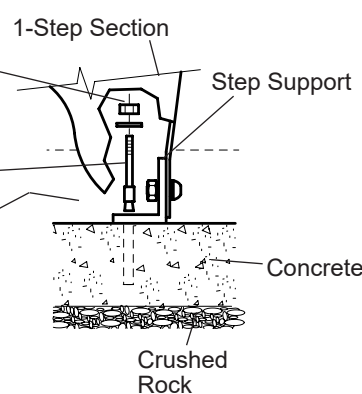


**DETAIL
SURFACE MOUNT
DECK SUPPORT**

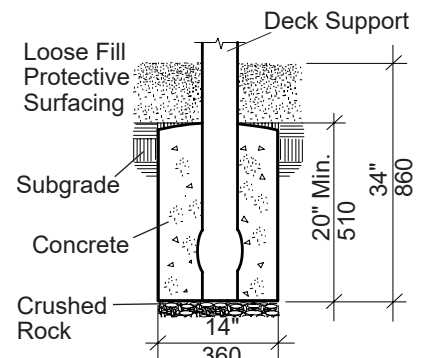


NOTE: Sufficient protective surfacing must cover hardware to satisfy fall height requirements.

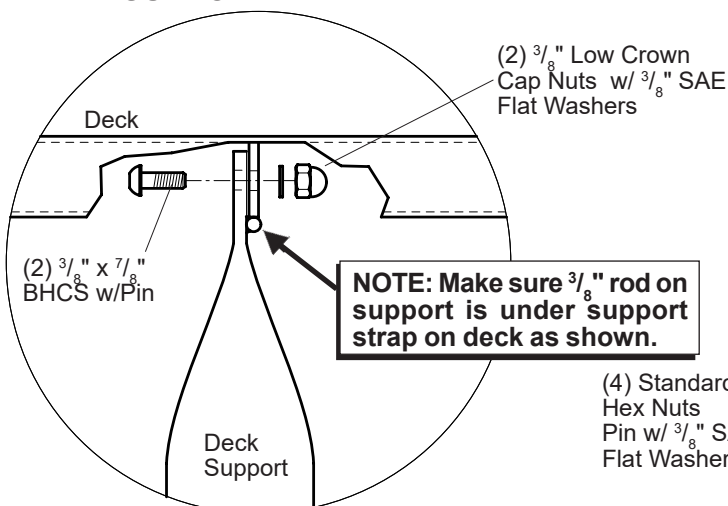
**DETAIL
SURFACE MOUNT
STEP SUPPORT**



**DETAIL
DECK SUPPORT BURY**

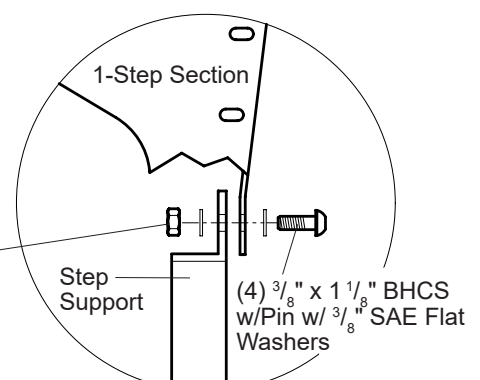


**DETAIL
DECK SUPPORT ATTACHMENT**



NOTE: Make sure 3/8 inch rod on support is under support strap on deck as shown.

**DETAIL
STEP SUPPORT ATTACHMENT**



PlayBooster® 152911 Transfer Module, 48", w/Handrails

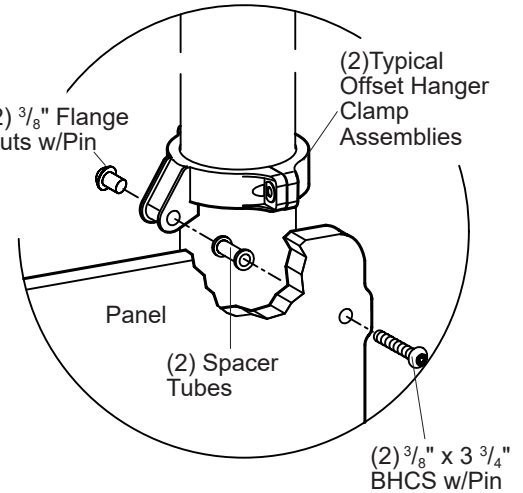
Sheet 2 of 2

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

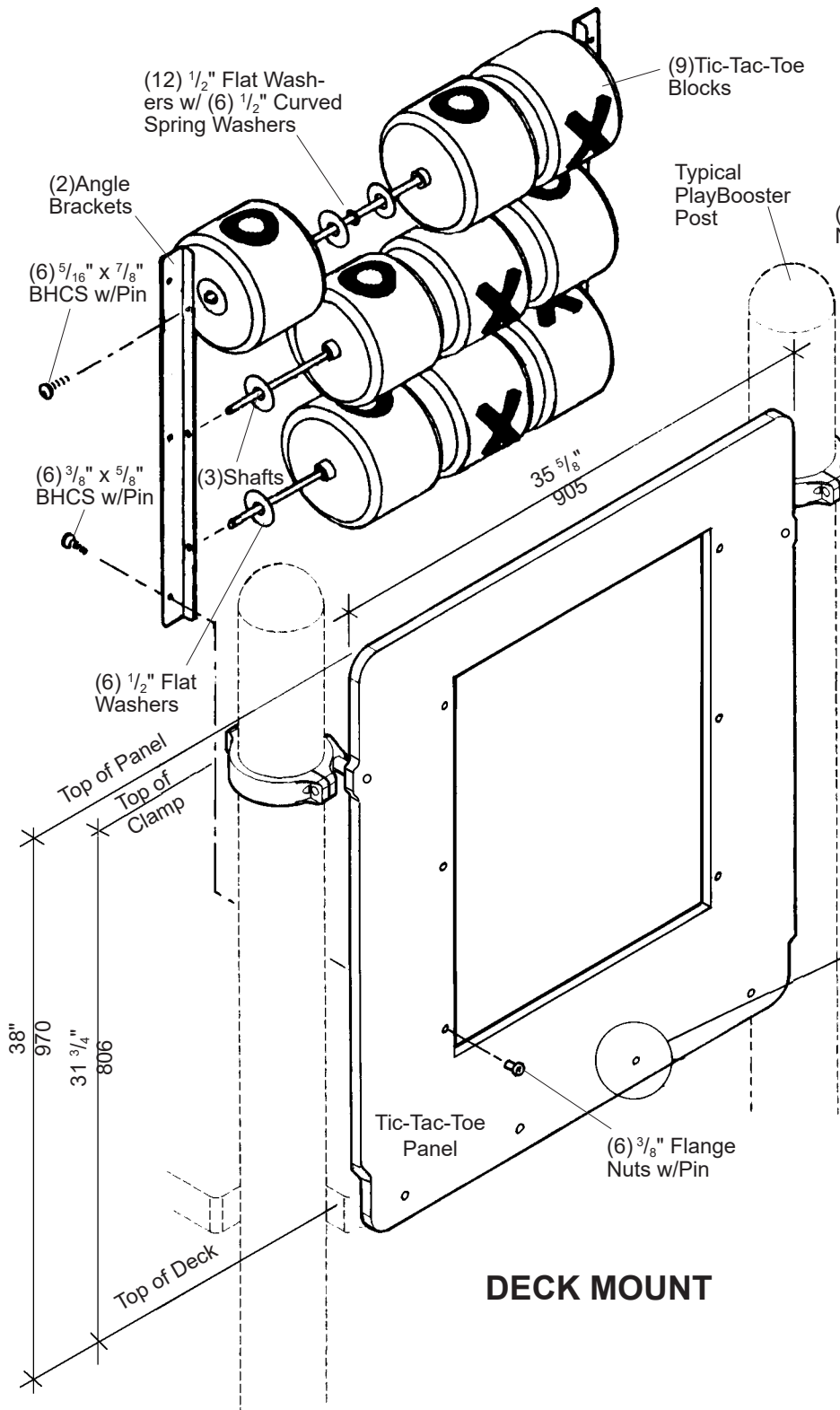
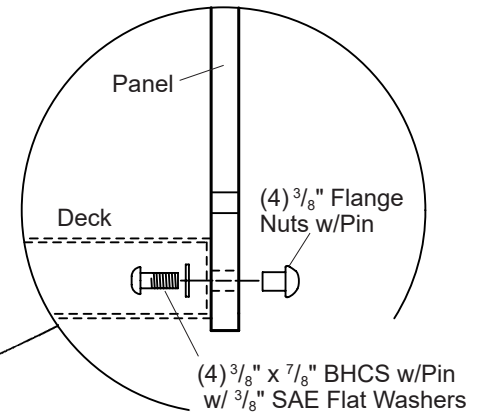
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Document #24445200

DETAIL PANEL ATTACHMENT



DETAIL TENDERDECKS



Parts List

Part#	Description	Qty.
ABOVE DECK		
105327	5" Half Clamp, Specify Color	2
113729	Offset Hanger Clamp, Specify Color.....	2
113468	Spacer Tube, Specify Color.....	2
104715	Tic-Tac-Toe Bracket, Specify Color.....	2
130642	Tic-Tac-Toe Block, Tan	9
113434	Tic-Tac-Toe Panel, Specify Color	1
137157	Shaft Set.....	1
106174	Shaft 1/2" Dia x 20.75" Set, SST	3
134725	Tic-Tac-Toe Hardware Package	1
132626	5/16" x 7/8" BHCS w/Pin, SST	6
100195	3/8" x 5/8" BHCS w/Pin, SST	6
100353	3/8" Flange Nut w/Pin, SST	6
100363	1/2" Flat Washer, SST	18
100380	1/2" Curved Spring Washer.....	6
124900	Tenderdeck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST.....	4
100353	3/8" Flange Nut w/Pin, SST	6
100365	3/8" SAE Flat Washer, SST.....	4
BELOW DECK		
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color.....	4
113468	Spacer Tube, Specify Color.....	2
113464	Angled Panel Bracket, Specify Color.....	1
104715	Tic-Tac-Toe Bracket, Specify Color.....	2
106174	Shaft, SST.....	3
130642	Tic-Tac-Toe Block, Tan	9
113434	Tic-Tac-Toe Panel, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
134725	Tic-Tac-Toe Hardware Package	1
132626	5/16" x 7/8" BHCS w/Pin, SST	6
100195	3/8" x 5/8" BHCS w/Pin, SST	6
100353	3/8" Flange Nut w/Pin, SST	6
100363	1/2" Flat Washer, SST	18
100380	1/2" Curved Spring Washer.....	6
124947	Below Deck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100195	3/8" x 5/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST.....	8
100353	3/8" Flange Nut w/Pin, SST	6

Specification

Permalene® Panel:	Solid color panel measures 35 5/8" wide x 41" high, color specified
Tic-Tac-Toe Blocks:	Rotationally molded from U.V. stabilized linear low density polyethylene, tan in color with brown molded-in symbols.
Tic-Tac-Toe Brkt:	Formed from .125" thick 5052 aluminum. Finish: ProShield®, color specified
Shafts:	Fabricated from 1/2" diameter stainless steel with ends tapped 5/16" 18UNC-2B.
Angled Panel Brkt:	Weldment comprised of .190" thick 5052 aluminum formed angle with (2) 6061-T6 aluminum threaded tubes 1 1/8" O.D. x 1 1/2" long. Finish: ProShield, color specified
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified
Offset Hanger Clamp Assembly:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product

installation/specifications)

Installation Time:	Above Deck Approx. 3/4 man hour Below Deck Approx. 1 man hour
Weight:	Above Deck 50 lbs. Below Deck 56 lbs.

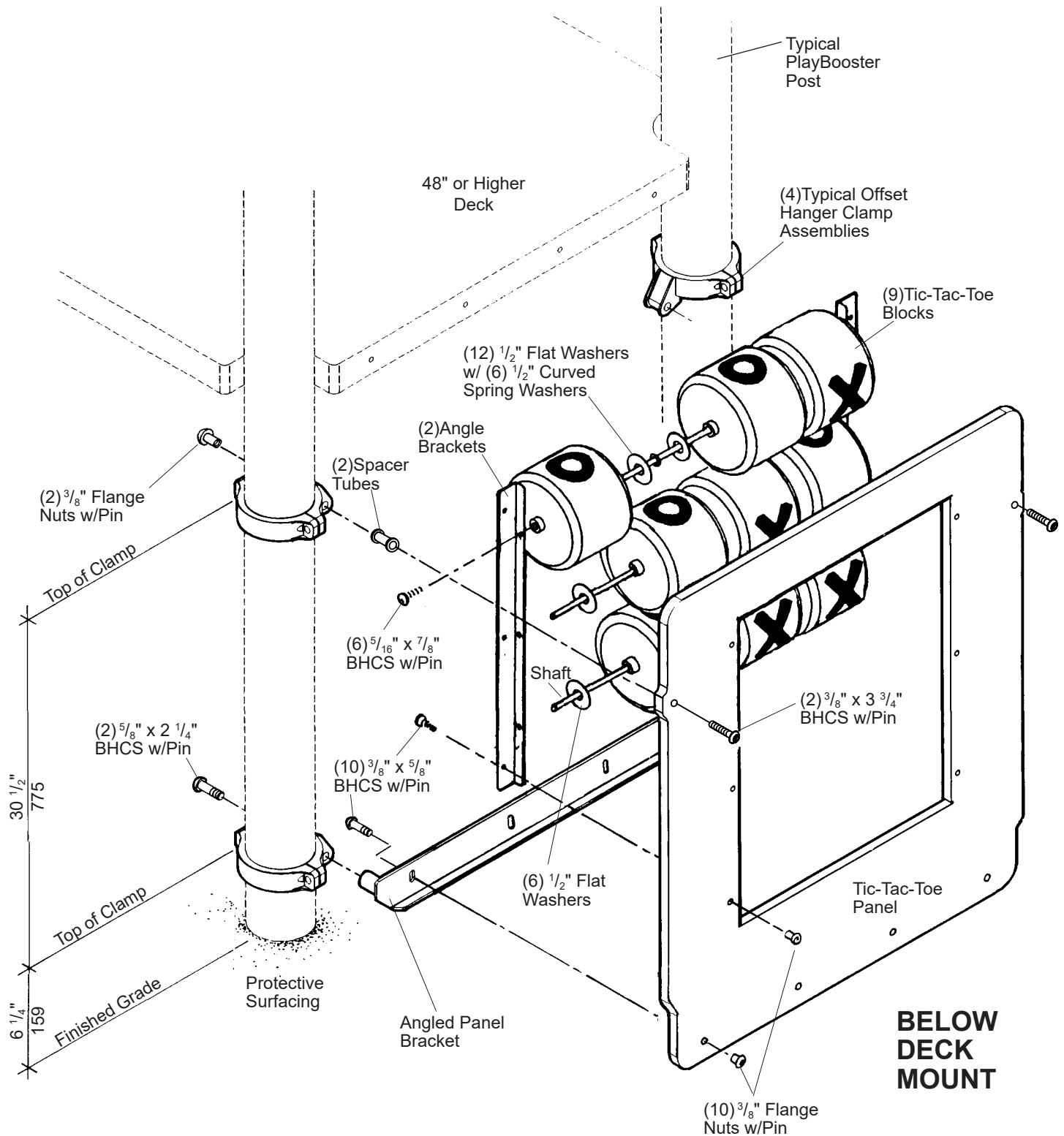
Installation Instructions

ABOVE DECK (See Sheet 1 of 2)

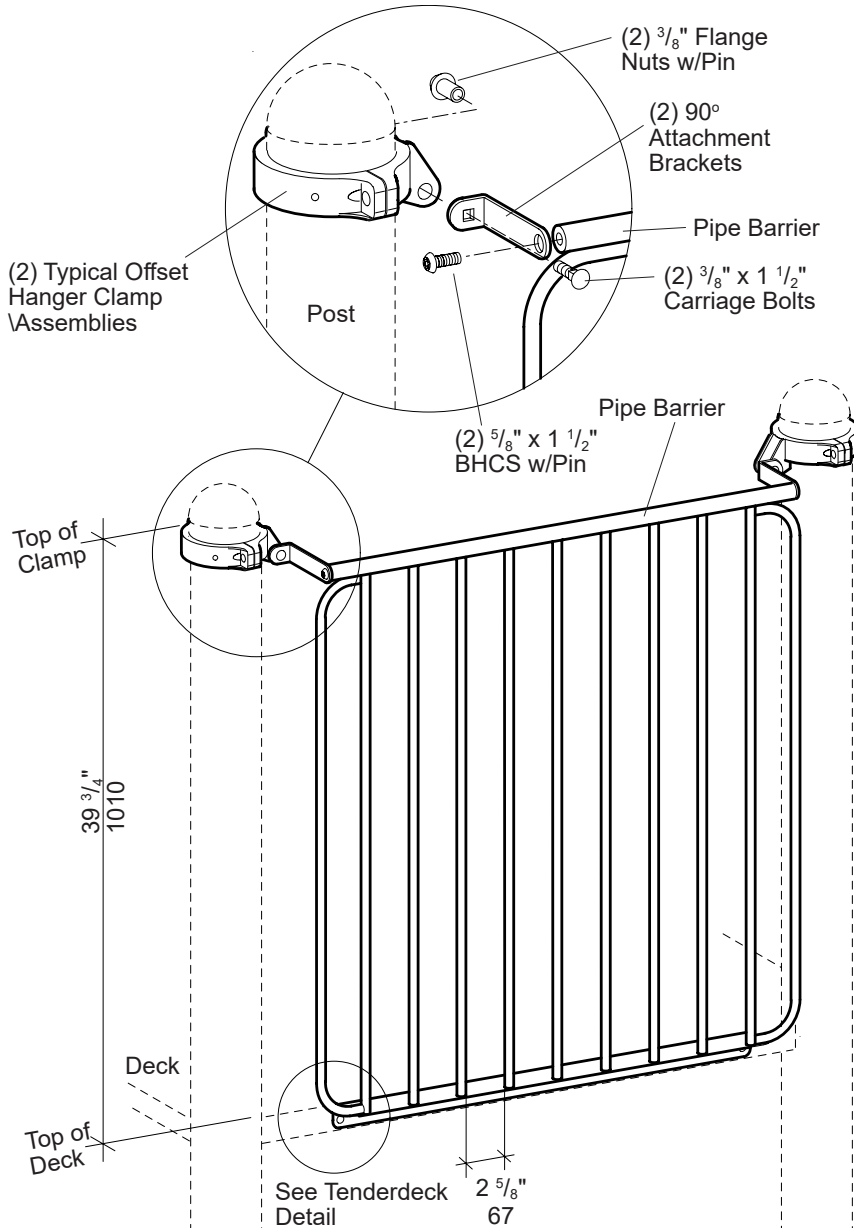
- 1) Attach panel to the face of the deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flange washers and 3/8" flange nuts w/pin. See Detail.
- 2) Attach offset hanger clamp assemblies to posts at height shown, using 5" half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 3) Attach panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 4) Attach shafts to one tic-tac-toe bracket, as shown, using 5/16" x 7/8" BHCS w/pin.
- 5) Thread a 1/2" flat washer onto shaft, then one block over shaft followed by a 1/2" flange washer, 1/2" curved spring washer, and 1/2" flange washer, another block etc., ending with a 1/2" flange washer. Continue in this sequence until all blocks are on shafts. Fasten other tic-tac-toe bracket to shafts as previous.
- 6) Attach tic-tac-toe block assembly to panel using (6) 3/8" x 5/8" BHCS w/pin through tic-tac-toe brackets and 3/8" flange nuts w/pin through panel.
- 7) Install protective surfacing before users are allowed to play on the structure.

BELOW DECK (See Sheet 2 of 2)

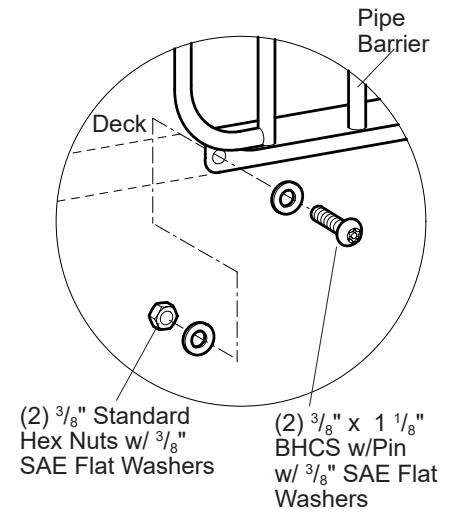
- 1) Attach offset hanger assemblies to posts at height shown, using 5" half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 2) Attach angled panel bracket to bottom of panel, using 3/8" x 5/8" BHCS w/pin and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 3) Attach angled panel bracket with panel to offset hanger clamp assemblies, using 5/8" x 2 1/4" BHCS w/pin. See Below Deck Mount.
- 4) Attach top of panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Typical Attachment To Post Detail.
- 5) Attach shafts to one tic-tac-toe bracket, as shown, using 5/16" x 7/8" BHCS w/pin.
- 6) Thread a 1/2" flat washer onto shaft, then one block over shaft followed by a 1/2" flange washer, 1/2" curved spring washer, and 1/2" flange washer, another block etc., ending with a 1/2" flange washer. Continue in this sequence until all blocks are on shafts. Fasten other tic-tac-toe bracket to shafts as previous.
- 7) Attach tic-tac-toe block assembly to panel, using (6) 3/8" x 5/8" BHCS w/pin through tic-tac-toe brackets and 3/8" flange nuts w/pin through panel.
- 8) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 9) Install protective surfacing before users are allowed to play on the



**DETAIL
90° ATTACHMENT BRACKETS**



**DETAIL
TENDERDECKS**



DECK MOUNT

Parts List

Part#	Description	Qty.
ABOVE DECK		
132755	Pipe Barrier, Specify Color	1
128824	90° Attachment Bracket, Specify Color.....	2
105327	5" Half Clamp, Specify Color	2
113729	Offset Hanger Clamp, Specify Color	2
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
132739	Barrier, Above Deck Hardware Package	1
100198	3/8" x 1 1/8" BHCS w/Pin, SST	6
100201	5/8" x 1 1/2" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST.....	4
100353	3/8" Flange Nut w/Pin, SST.....	2
116017	3/8" x 1 1/2" Carriage Bolt w/Patch, SST.....	2
100327	3/8" Standard Hex Nut, SST	2
100365	3/8" SAE Flat Washer, SST.....	4
BELOW DECK		
132755	Pipe Barrier, Specify Color	1
128824	90° Attachment Bracket, Specify Color.....	2
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color	4
113464	Angled Panel Bracket, Specify Color.....	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
132741	Barrier, Below Deck Hardware Package	1
116017	3/8" x 1 1/2" Carriage Bolt, SST	2
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100196	3/8" x 7/8" BHCS w/Pin, SST	2
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST.....	8
100201	5/8" x 1 1/2" BHCS w/Pin, SST	2
100327	3/8" Standard Hex Nut, SST	2
100365	3/8" SAE Flat Washer, SST.....	4
100353	3/8" Flange Nut w/Pin, SST	2

Specification

Barrier:	Weldment comprised of 5/8" solid steel vertical rails, 1 1/8" O.D. x 11 GA (.120") steel horizontal rails with 203 or 303 stainless steel welded inserts with 5/8" internal threads, 1 1/2" x 1 1/2" x 29 1/2" angle iron. Barrier measures 33 7/8" wide x 39 13/16" high. Finish: TenderTuff™, color specified
90° Bracket:	Formed from 1/4" x 1 1/4" HRPO flat steel. Finish: ProShield®, color specified
Angled Panel Brkt.:	Weldment comprised of .190" thick 5052 aluminum formed angle with (2) 6061-T6 aluminum threaded tubes 1 1/8" O.D. x 1 1/2" long. Finish: ProShield, color specified
Offset Hanger Clamp Assembly:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications
Installation Time:	Approx. 1 man hour
Weight:	Above Deck 52 lbs. Below Deck 56 lbs.

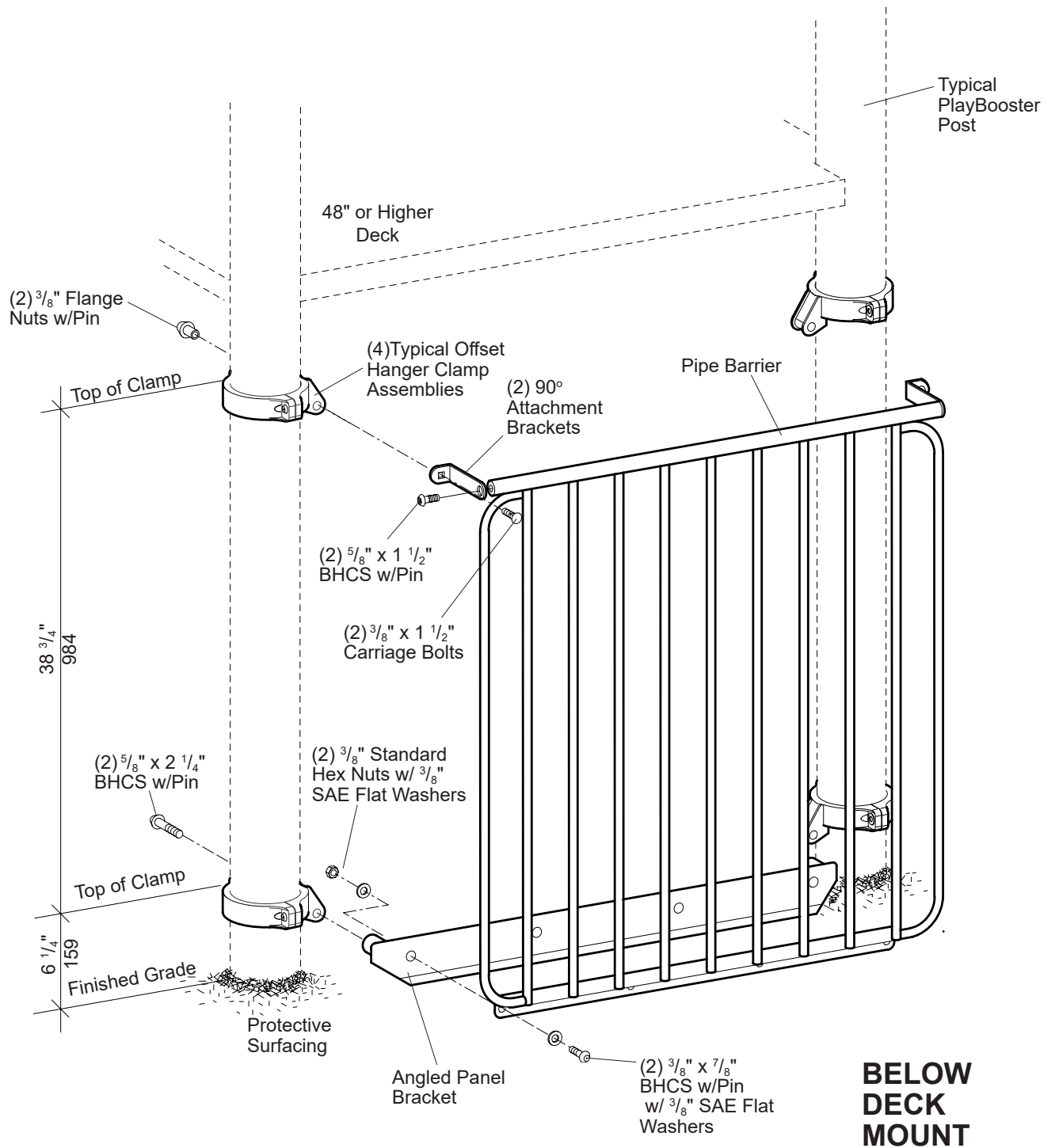
Installation Instructions

ABOVE DECK (See Sheet 1 of 2)

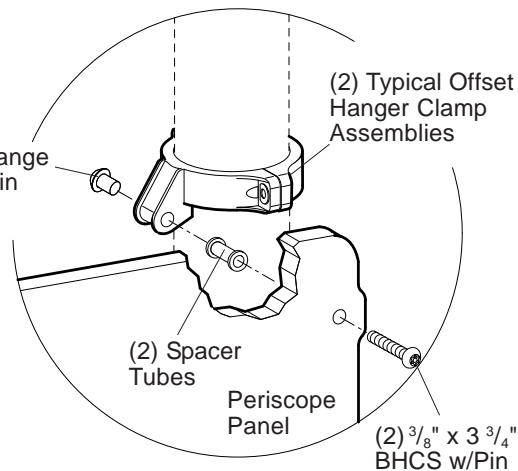
- 1) Attach pipe barrier to the face of the deck using 3/8" x 1 1/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers. Refer To The Tenderdeck Detail..
- 2) Attach offset hanger clamps to posts at height shown, using 5" half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 3) Attach the 90° attachment brackets to pipe barrier using 5/8" x 1 1/2" BHCS w/pin. Refer To The 90° Attachment Bracket Detail.
- 4) Attach the 90° attachment brackets to the offset hanger clamps using 3/8" x 1 1/2" carriage bolts and 3/8" flange nuts w/pin. Refer To The 90° Attachment Bracket Detail.
- 5) Install protective surfacing before users are allowed to play on the structure.

BELOW DECK (See Sheet 2 of 2)

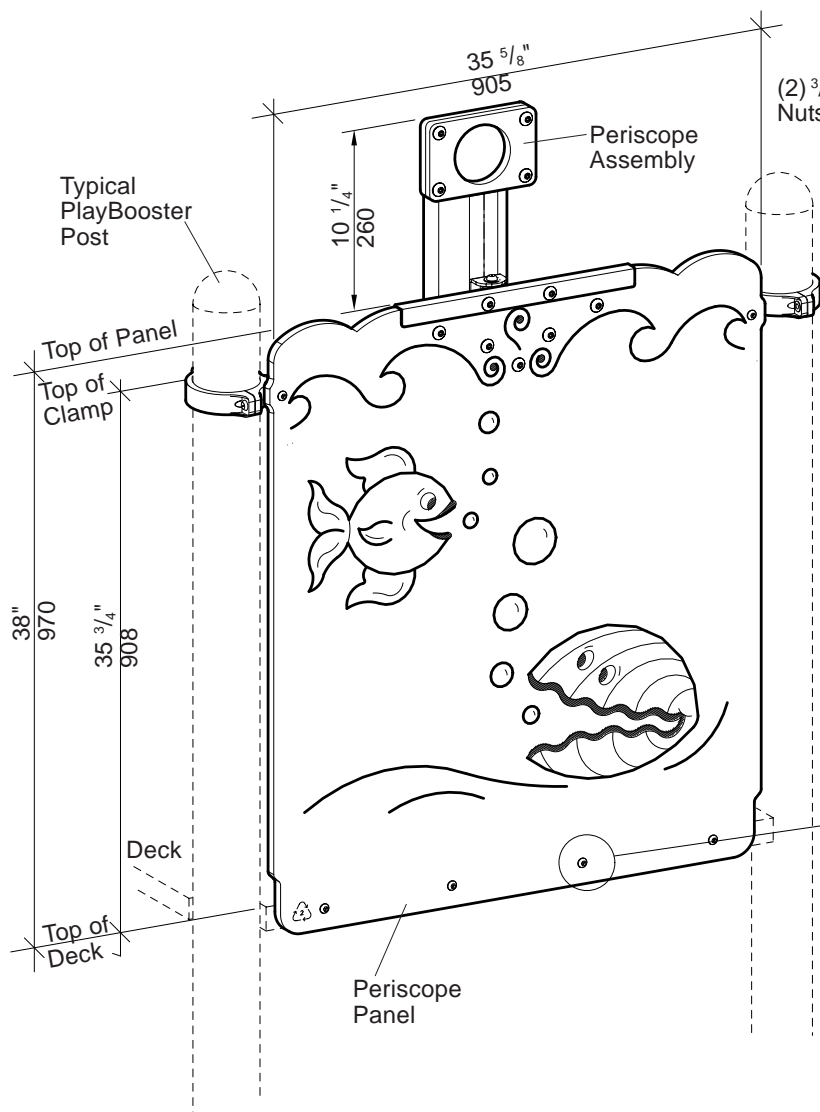
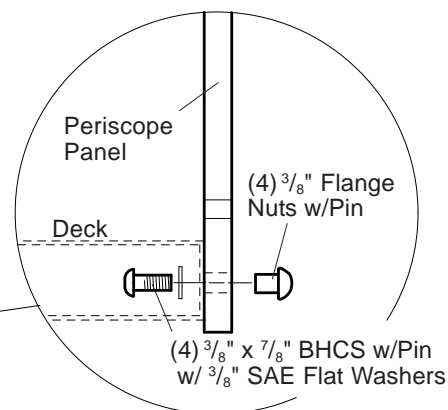
- 1) Attach offset hanger assemblies to posts at height shown. Using 5" half clamps and 3/8" x 1 1/8" BHCS w/pin and with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 2) Attach angled panel bracket to bottom of pipe barrier using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" standard hex nuts with 3/8" SAE flat washers. See Below Deck Mount
- 3) Attach angled panel bracket with pipe barrier to offset hanger clamp assemblies using 5/8" x 2 1/4" BHCS w/pin. See Below Deck Mount.
- 4) Attach the 90° attachment brackets to pipe barrier using 5/8" x 1 1/2" BHCS w/pin. Refer To The 90° Attachment Bracket Detail.
- 5) Attach the 90° attachment brackets to the offset hanger clamps using 3/8" x 1 1/2" carriage bolts and 3/8" flange nuts w/pin. Refer To The 90° Attachment Bracket Detail.
- 6) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec sheet.
- 7) Install protective surfacing before users are allowed to play on the structure.



DETAIL PANEL ATTACHMENT



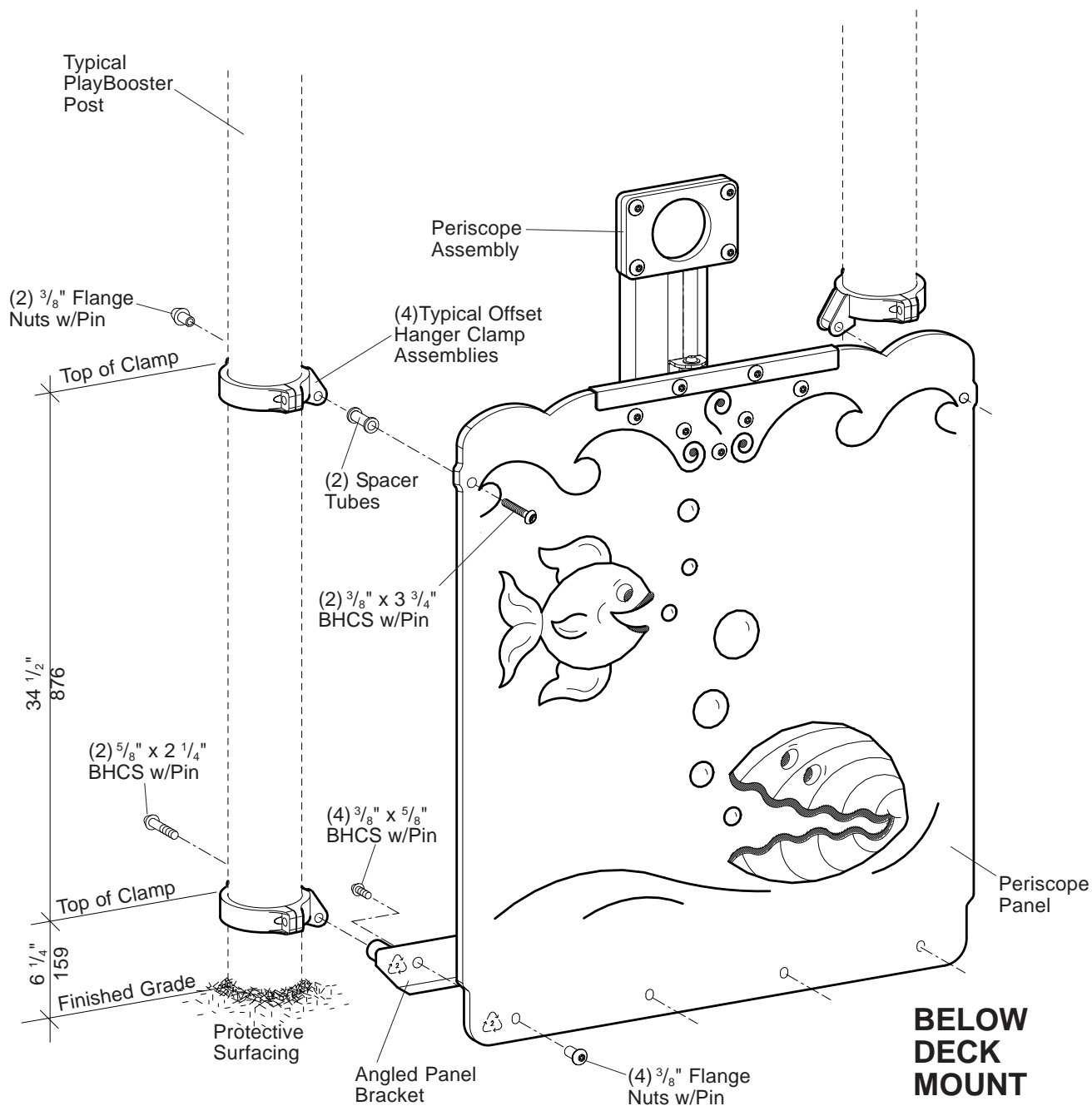
DETAIL TENDERDECKS

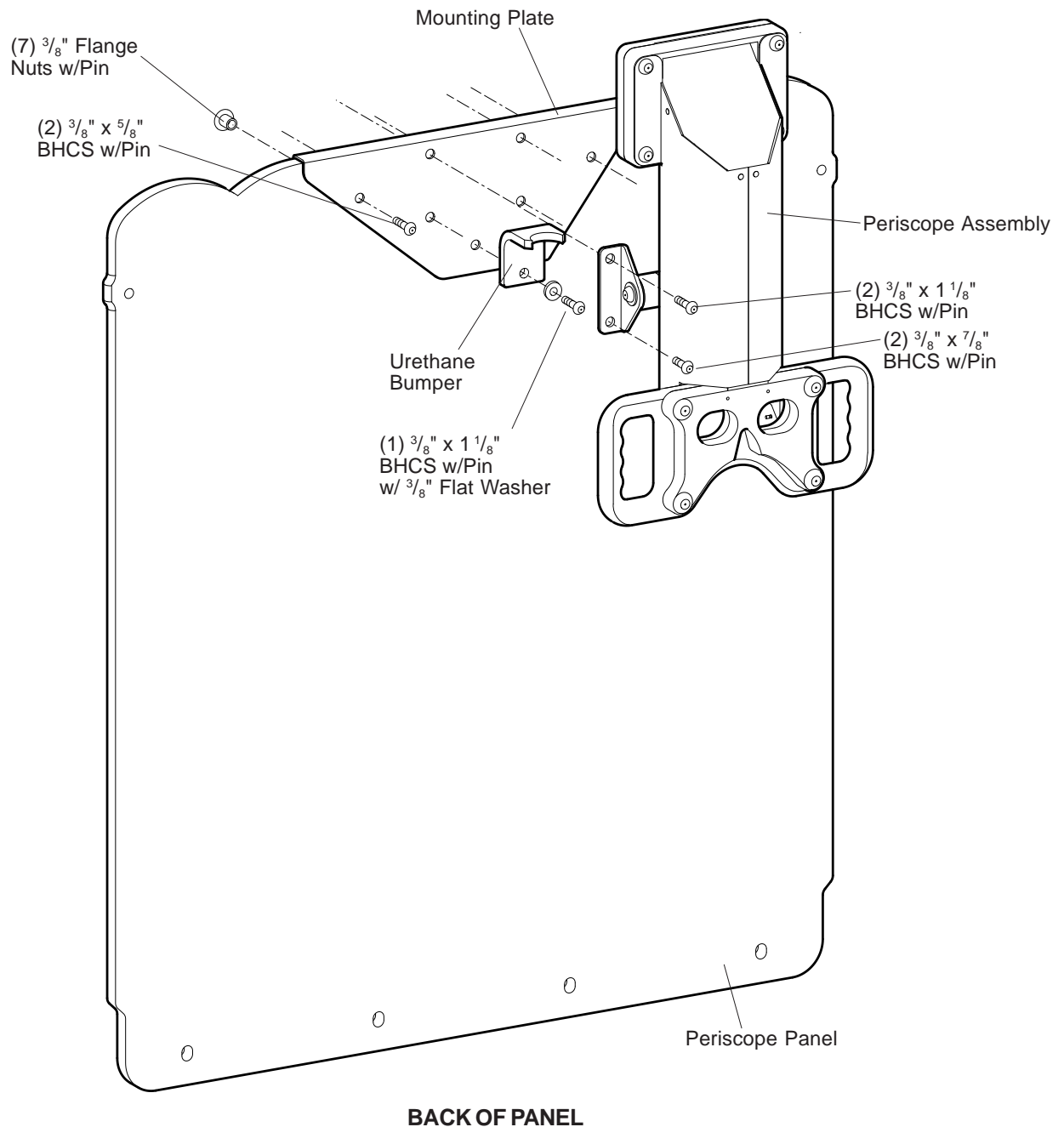


DECK MOUNT

NOTE:

The minimum height deck above a Ground Level Periscope Panel is 64".





Parts List

Part#	Description	Qty.
ABOVE DECK		
129071	Periscope Panel, Specify Color	1
129118	Periscope Assembly, Specify Color	1
130269	Mounting Plate, Specify Color	1
113729	Offset Hanger Clamp, Specify Color	2
105327	5" Half Clamp, Specify Color	2
113468	Spacer Tube, Specify Color	2
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
130367	Periscope Attachment Hardware Package	1
100195	3/8" x 5/8" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	2
100198	3/8" x 1 1/8" BHCS w/Pin, SST	3
100353	3/8" Flange Nut w/Pin, SST	7
100362	3/8" Flat Washer, SST	1
145121	Urethane Bumper	1
124900	Tenderdeck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	6
100365	3/8" SAE Flat Washer, SST	4
BELOW DECK		
129071	Periscope Panel, Specify Color	1
129118	Periscope Assembly, Specify Color	1
130269	Mounting Plate, Specify Color	1
113729	Offset Hanger Clamp, Specify Color	4
105327	5" Half Clamp, Specify Color	4
113468	Spacer Tube, Specify Color	2
113464	Angled Panel Bracket, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
130367	Periscope Attachment Hardware Package	1
100195	3/8" x 5/8" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	2
100198	3/8" x 1 1/8" BHCS w/Pin, SST	3
100353	3/8" Flange Nut w/Pin, SST	7
100362	3/8" Flat Washer, SST	1
145121	Urethane Bumper	1
124947	Below Deck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100195	3/8" x 5/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST	8
100353	3/8" Flange Nut w/Pin, SST	6

Specifications

Permalene® Panel:	Two color panel measures 35 5/8" x 41" high, color specified.
Periscope Assy.:	Fabricated from an octagon 14 GA (.075") steel tube with (2) 18 GA (.048") 304 stainless steel bright annealed (reflective finishes). Periscope rotates vertically and horizontally. Finish: ProShield®, color specified. Permalene: Hand-grip and lense covers are black in color.
Mounting Plate:	Fabricated from formed 11 GA (.120") HRS. Finish: ProShield, color specified.
Angled Panel Brkt.:	Weldment comprised of .190" thick 5052 aluminum formed angle with (2) 6061-T6 aluminum threaded tubes 1 1/8" O.D. x 1 1/2" long. Finish: ProShield, color specified.
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified.
Offset Hanger Clamp Assembly:	Cast aluminum. Finish: ProShield, color specified.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Installation Time: Above Deck Approx. 3/4 man hour
Below Deck Approx. 1 man hour
Weight: Above Deck 67 lbs.
Below Deck 73 lbs.

Installation Instructions

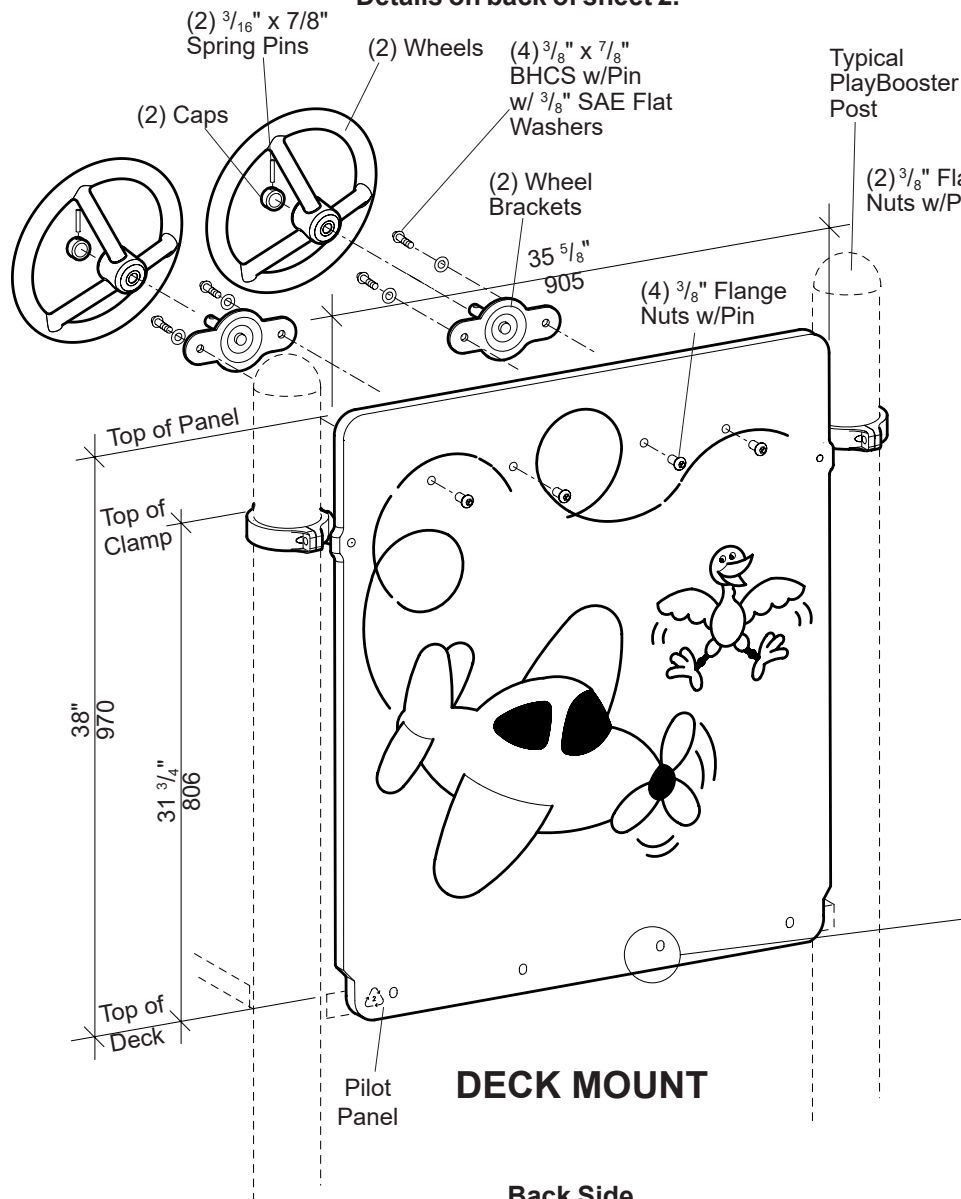
ABOVE DECK

- 1) Attach panel to the face of the deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin. Refer to the Tenderdeck Detail.
- 2) Attach offset hanger clamp assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 3) Attach panel to the offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. Refer to the Panel Attachment Detail.
- 4) Attach periscope assembly to panel, using mounting plate, 3/8" x 5/8" BHCS w/pin, 3/8" x 7/8" BHCS w/pin, 3/8" x 1 1/8" BHCS w/pin and 3/8" flange nuts w/pin, as shown.
- 5) Attach urethane bumper to periscope assembly, using 3/8" x 1 1/8" BHCS w/pin with 3/8" flat washer and 3/8" flange nut w/pin, as shown.
- 6) Install protective surfacing before users are allowed to play on the structure.

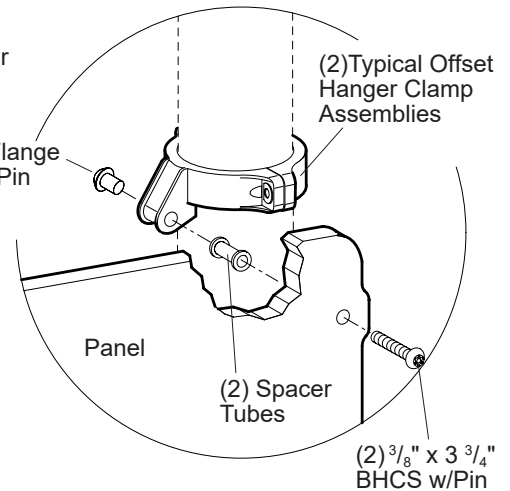
BELOW DECK

- 1) Attach offset hanger clamp assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 2) Attach angled panel bracket to bottom of panel, using 3/8" x 5/8" BHCS w/pin and 3/8" flange nuts w/pin. Refer to Below Deck Mount.
- 3) Attach angled panel bracket with panel to offset hanger clamp assemblies, using 5/8" x 2 1/4" BHCS w/pin. Refer to Below Deck Mount.
- 4) Attach top of panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. Refer to Below Deck Mount.
- 5) Attach periscope assembly to panel, using mounting plate, 3/8" x 5/8" BHCS w/pin, 3/8" x 7/8" BHCS w/pin, 3/8" x 1 1/8" BHCS w/pin and 3/8" flange nuts w/pin, as shown.
- 6) Attach urethane bumper to periscope assembly, using 3/8" x 1 1/8" BHCS w/pin with 3/8" flat washer and 3/8" flange nut w/pin, as shown.
- 7) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 8) Install protective surfacing before users are allowed to play on the structure.

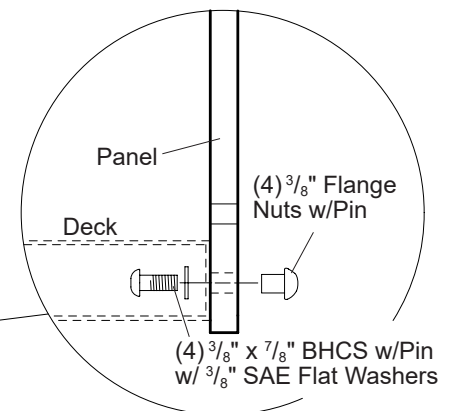
Refer to Wheel Assembly
Details on back of sheet 2.



DETAIL PANEL ATTACHMENT

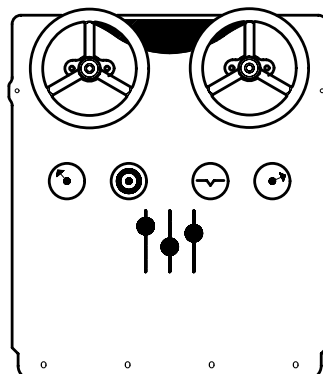


DETAIL TENDERDECKS



DECK MOUNT

Back Side



NOTE: Steering Wheel Infill Panel available. Refer to the Wheel Spec Sheet.

Parts List

Part#	Description	Qty.
ABOVE DECK		
127588	Pilot Panel, Specify Color.....	1
108432	Wheel, Specify Color.....	2
127242	Steering Wheel Bracket, Specify Color.....	2
105327	5" Half Clamp, Specify Color.....	2
113729	Offset Hanger Clamp, Specify Colo.....	2
113468	Spacer Tube, Specify Color.....	2
100610	1/4" x 5/8" Drive Rivet, AL/SST.....	2
240451	Permalene Panel Hardware Package	2
100196	3/8" x 7/8" BHCS w/Pin, SST.....	4
100353	3/8" Flange Nut w/Pin, SST.....	4
237528	3/16" x 7/8" Spring Pin, SST.....	2
234353	Cap, White.....	2
100365	3/8" SAE Flat Washers, SST.....	2
124900	Tenderdeck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST.....	2
100196	3/8" x 7/8" BHCS w/Pin, SST.....	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST.....	4
100351	3/8" Tee Nut, SST.....	4
100353	3/8" Flange Nut w/Pin, SST.....	6
100365	3/8" SAE Flat Washer, SST.....	4
BELOW DECK		
127588	Pilot Panel, Specify Color.....	1
113464	Angled Panel Bracket, Specify Color.....	1
127242	Steering Wheel Bracket, Specify Color.....	2
108432	Wheel, Specify Color.....	2
105327	5" Half Clamp, Specify Color.....	4
113729	Offset Hanger Clamp, Specify Colo.....	4
113468	Spacer Tube, Specify Color.....	2
100610	1/4" x 5/8" Drive Rivet, AL/SST.....	4
240451	Permalene Panel Hardware Package	2
100196	3/8" x 7/8" BHCS w/Pin, SST.....	4
100353	3/8" Flange Nut w/Pin, SST.....	4
237528	3/16" x 7/8" Spring Pin, SST.....	2
234353	Cap, White.....	2
100365	3/8" SAE Flat Washers, SST.....	2
124947	Ground Level Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST.....	2
100195	3/8" x 5/8" BHCS w/Pin, SST.....	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST.....	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST.....	2
100351	3/8" Tee Nut, SST.....	8
100353	3/8" Flange Nut w/Pin, SST.....	6

Specification

Permalene® Panel:	Two color panel measures 35 3/8" wide x 41" high, color specified
Wheel Bracket:	Weldment comprised of formed 3/16" plate and 5/8" O.D. stainless steel shaft. Finish: ProShield®, color specified
Wheel:	12" diameter castA356 aluminum alloy. Finish: TenderTuff®, color specified
Angled Panel Brkt:	Weldment comprised of .190" thick 5052 aluminum formed angle with (2) 6005-T5 aluminum threaded tubes 1 1/8" O.D. x 1 1/2" long. Finish: ProShield, color specified.

Specifications are subject to change without notice

PlayBooster® 119514 Pilot Panel

Spacer Tube: Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified

Offset Hanger

Clamp Assembly: Cast aluminum. Finish: ProShield, color specified
Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: Above Deck Approx. 3/4 man hour
Below Deck Approx. 1 man hour

Weight: Above Deck 53 lbs.
Below Deck 61 lbs.

Installation Instructions

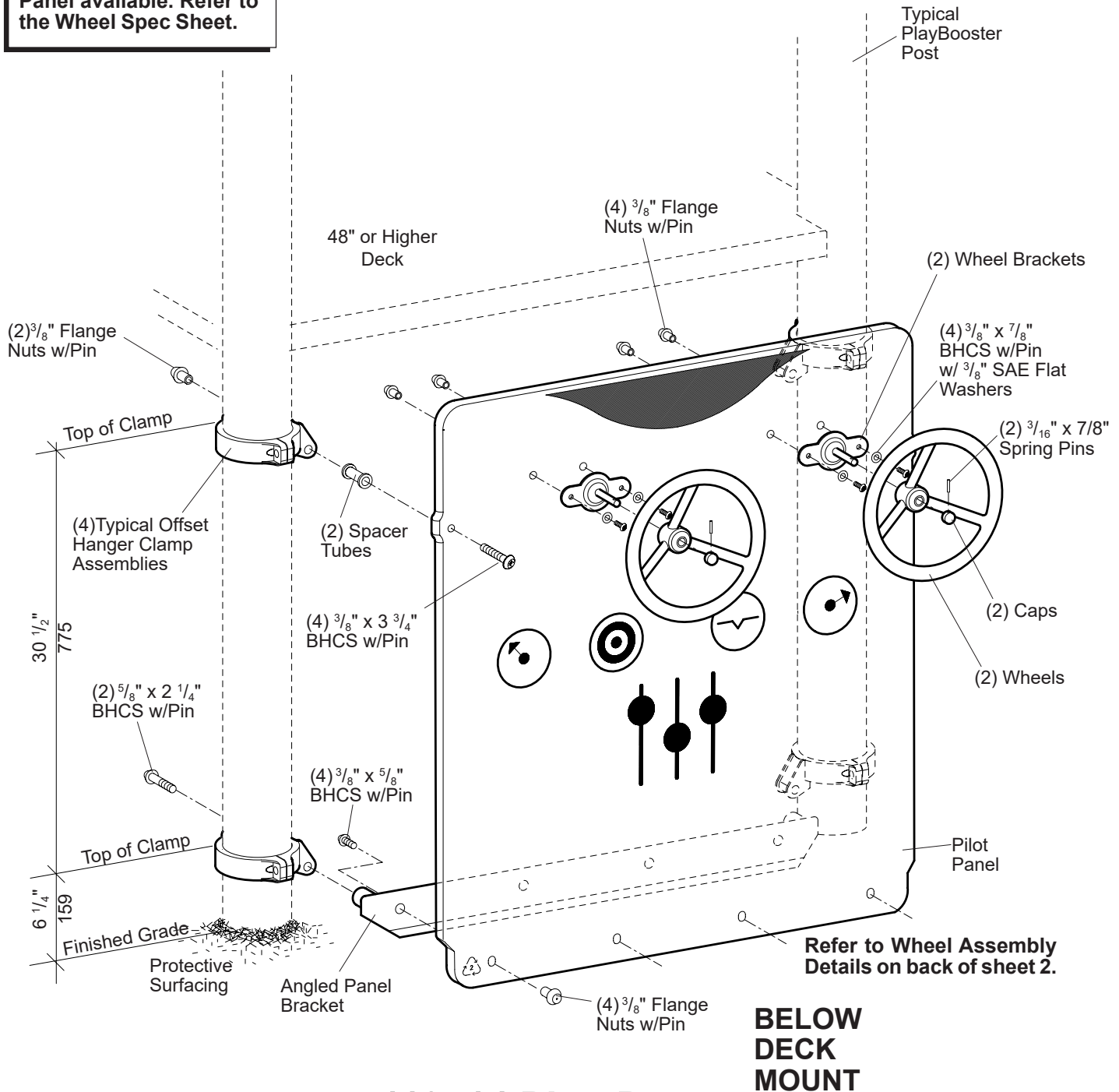
ABOVE DECK (See Sheet 1 of 2)

- 1) (Attach panel to the face of the decks, using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin. Refer to the Tenderdeck Detail.
- 2) Attach offset hanger assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet
- 3) Attach panel to offset hanger assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 4) Attach wheels as shown on sheet 1 & back of sheet 2.
- 5) Install protective surfacing before users are allowed to play on the structure.

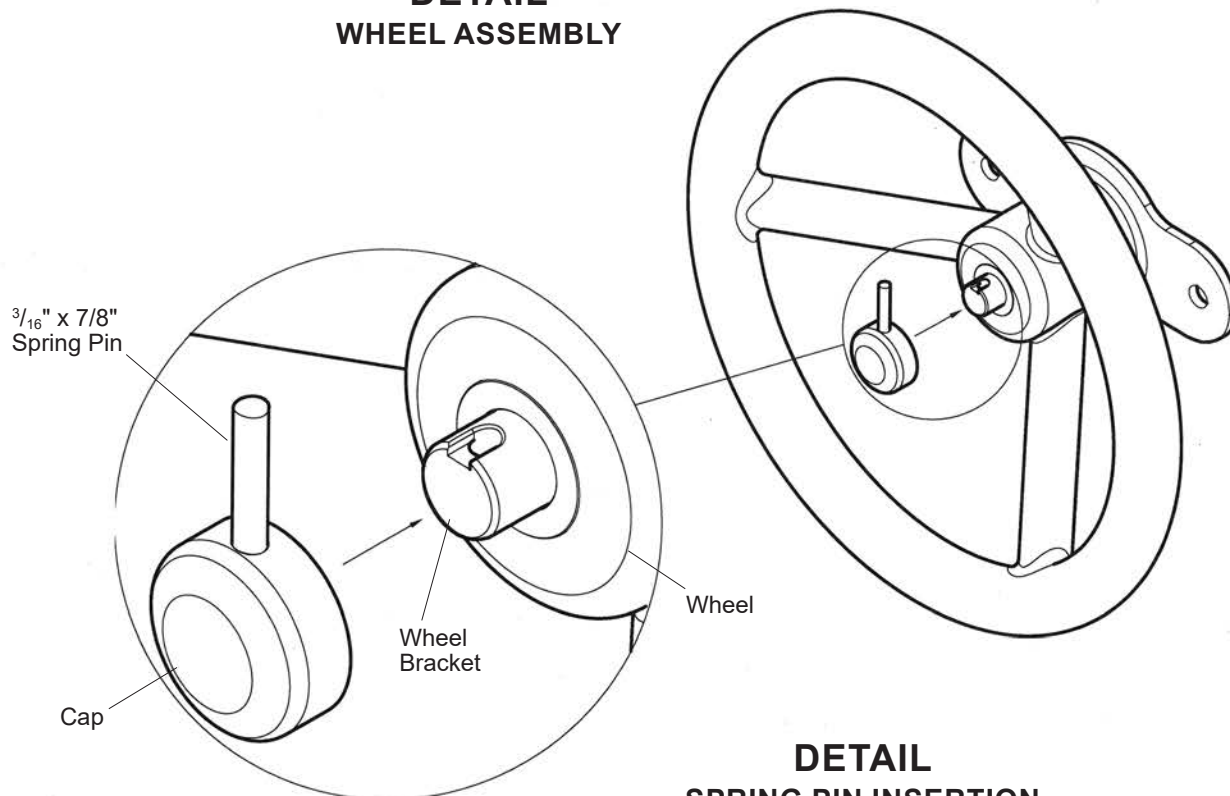
BELOW DECK (See Sheet 2 of 2)

- 1) Attach offset hanger assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer to the Typical Offset Hanger Clamp Spec Sheet
- 2) Attach angled panel bracket to bottom of panel using 3/8" x 5/8" BHCS w/pin and 3/8" flange nuts w/pin. See Below Deck Mount
- 3) Attach angled panel bracket with panel to offset hanger assemblies, using 5/8" x 2 1/4" BHCS w/pin. See Below Deck Mount.
- 4) Attach top of panels to offset hanger assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Below Deck Mount.
- 5) Attach wheels as shown on front & back of sheet 2.
- 6) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet
- 7) Install protective surfacing before users are allowed to play on the structure.

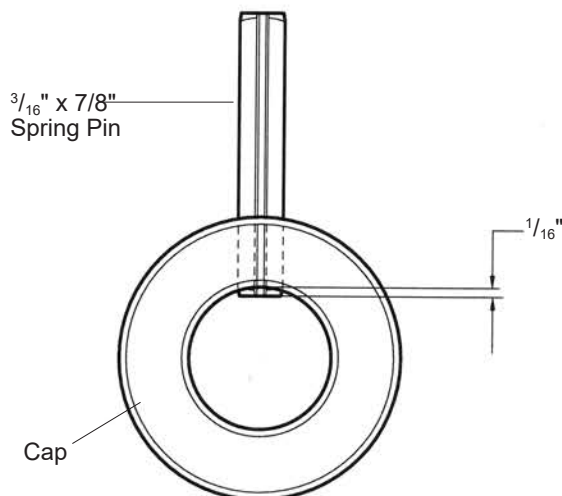
NOTE: Steering Infill Panel available. Refer to the Wheel Spec Sheet.



DETAIL WHEEL ASSEMBLY



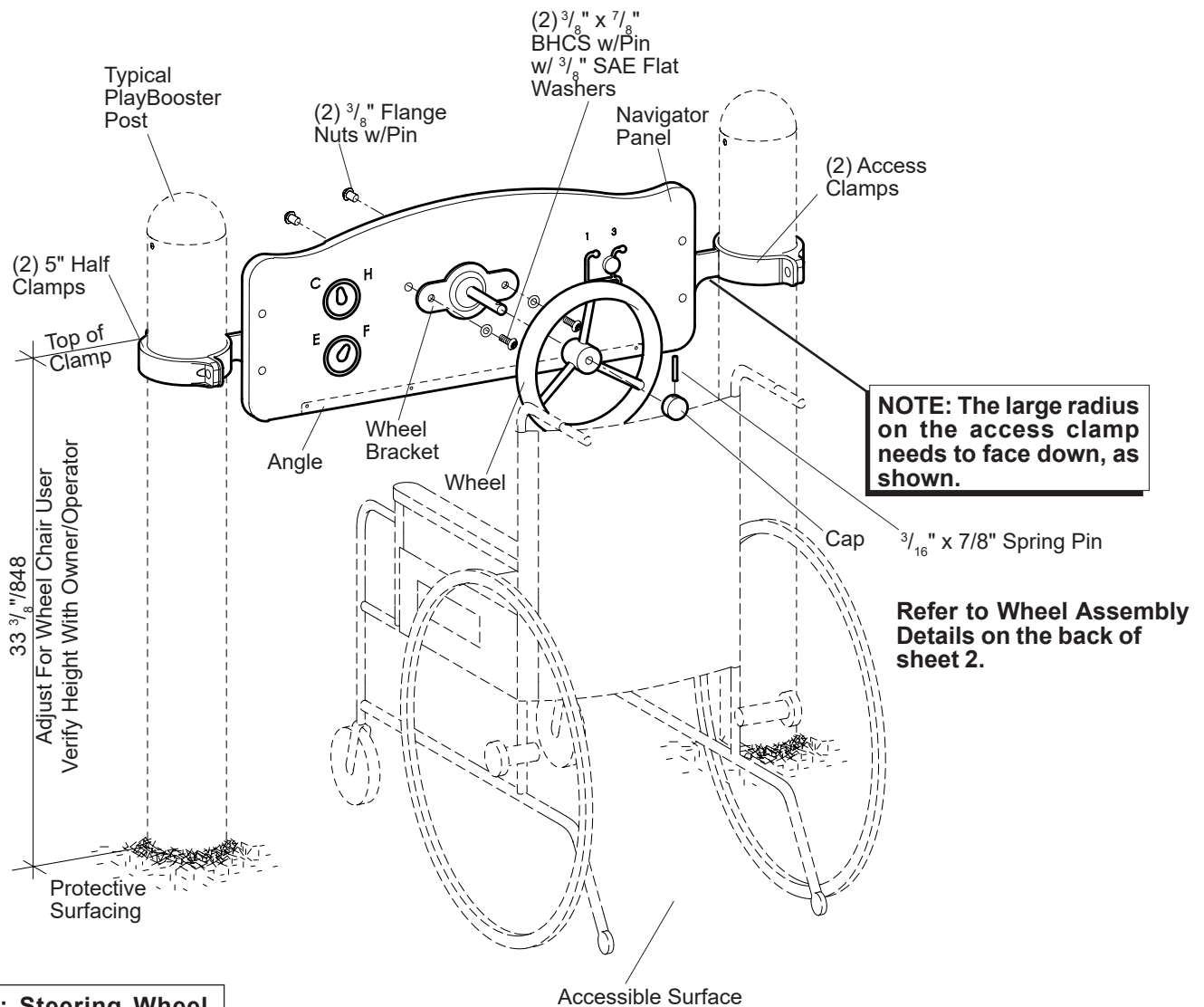
DETAIL SPRING PIN INSERTION (CAP BACK VIEW)



NOTE: To assist in the alignment of the cap to the wheel bracket shaft, tap spring pin through cap approximately $\frac{1}{16}$ ". Orient spring pin to groove on wheel bracket shaft. Slide cap in place and tap spring pin through cap and shaft until flush

SAFETY NOTE

Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)



NOTE: Steering Wheel Infill Panel available. Refer to the Wheel Spec Sheet.

Parts List

Part#	Description	Qty.
138085	Navigator Panel, Specify Color.....	1
108432	Steering Wheel, Specify Color.....	1
127242	Steering Wheel Bracket, Specify Color.....	1
127331	Angle, Black.....	1
188387	Access Clamp, Specify Color.....	2
105327	5" Half Clamp, Specify Color.....	2
100610	1/4" x 5/8" Drive Rivet, AL/SST.....	2
211890	Access Panel Spacer, Specify Color.....	2
212999	Panel Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST.....	4
100351	3/8" Tee Nut, SST.....	4
100353	3/8" Flange Nut w/Pin, SST.....	4
127463	Torx Hex Bit.....	1
127872	#14 x 3/4" Torx Screw, SST.....	4
100171	3/8" x 1 1/2" BHCS w/Pin, SST.....	4
100365	3/8" SAE Flat Washer, SST.....	8
240451	Driver Panel Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST.....	2
100353	3/8" Flange Nut w/Pin, SST.....	2
237528	3/16" x 7/8" Spring Pin, SST.....	1
234353	Cap, White.....	1
100365	3/8" SAE Flat Washer, SST.....	2

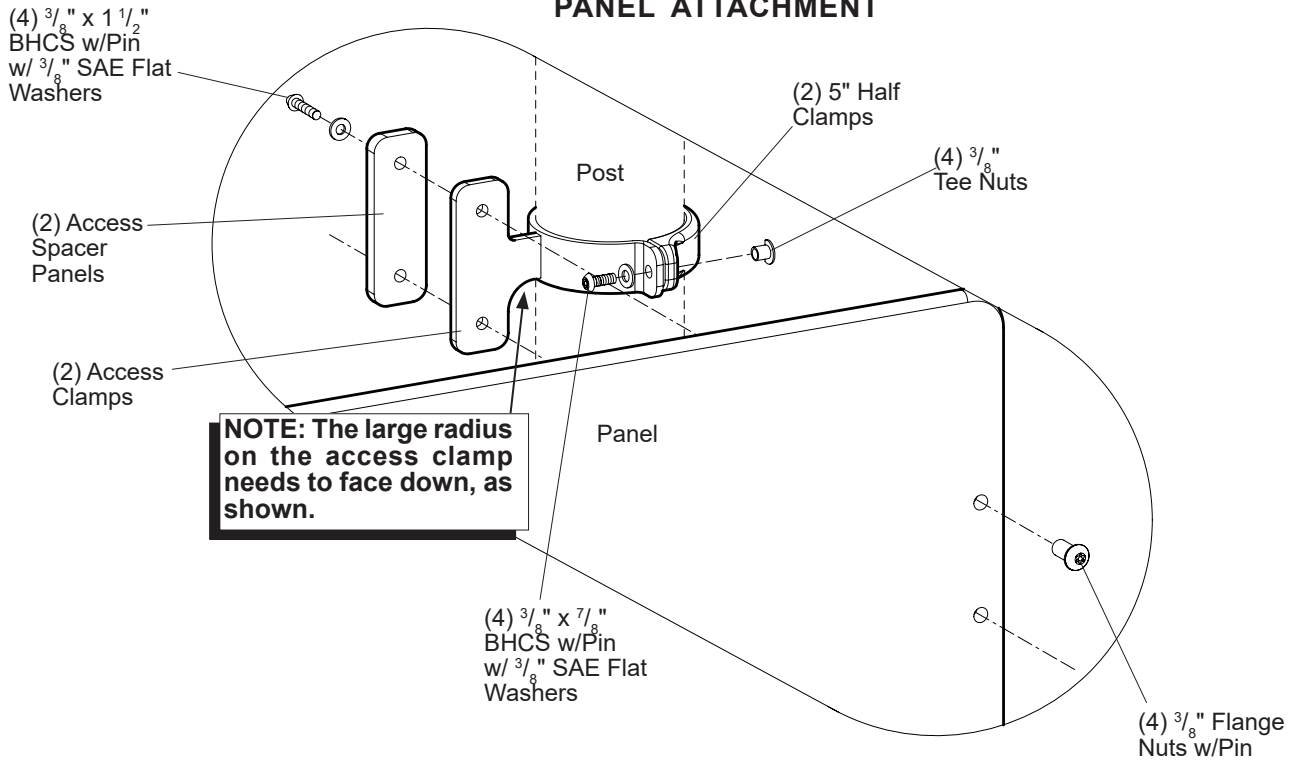
Specification

Panel:	Two color Permalene® panel measures 34" wide x 13" high, color specified
Panel Spacer:	Permalene®, color specified
Angle:	Fabricated from formed 11 GA (.120") HRPO sheet steel. Finish: ProShield®, Black in color.
Wheel:	12" diameter cast A356 aluminum alloy. Finish: TenderTuff®, color specified
Wheel Bracket:	Weldment comprised of formed 3/16" plate and 5/8" O.D. stainless steel shaft. Finish: ProShield, color specified
Access Clamp:	Weldment comprised of 3/8" HRPO steel plate and 1/4" x 1 3/4" wide steel clamp. Finish: ProShield, color specified
Half Clamp:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 1/2 man hour
Weight:	23 lbs.

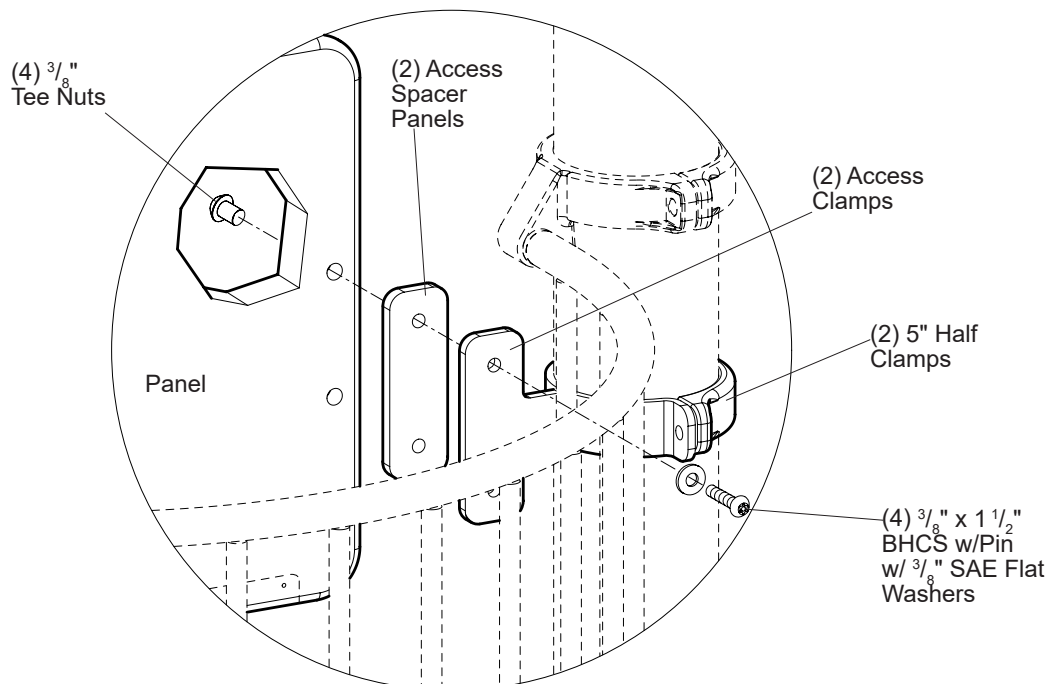
Installation Instructions

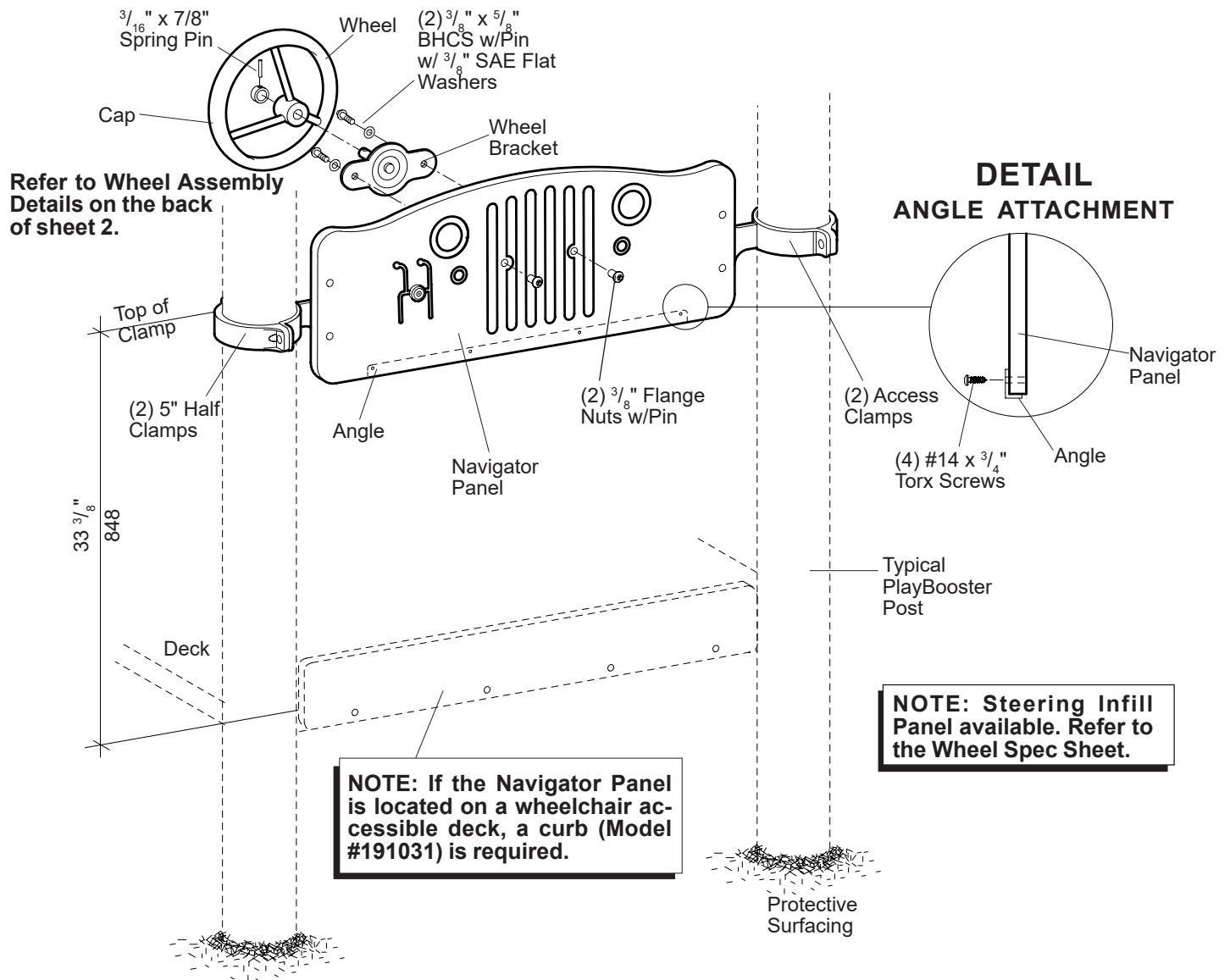
- 1) Attach the angle to the bottom of the panel using #14 x 3/4" torx screws. Refer to the Angle Attachment Detail.
- 2) Attach the access clamps to posts at the height shown, using 5" half clamps, 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" tee nuts. **NOTE:** The large radius on the access clamp needs to face down, as shown.
- 3) Attach panel and access spacer panels to access clamps, using 3/8" x 1 1/2" BHCS w/pin, with 3/8" SAE flat washers and 3/8" flange nuts w/pin. Refer to the Panel Attachment Detail.
- 4) Attach wheel bracket to panel, using 3/8" x 5/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin. Slide wheel and cap onto wheel bracket shaft and tap 3/16" x 7/8" Spring pin through cap and shaft. Refer to Wheel Assembly Details on the back of sheet 2.
- 5) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Assembly sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.

DETAIL PANEL ATTACHMENT

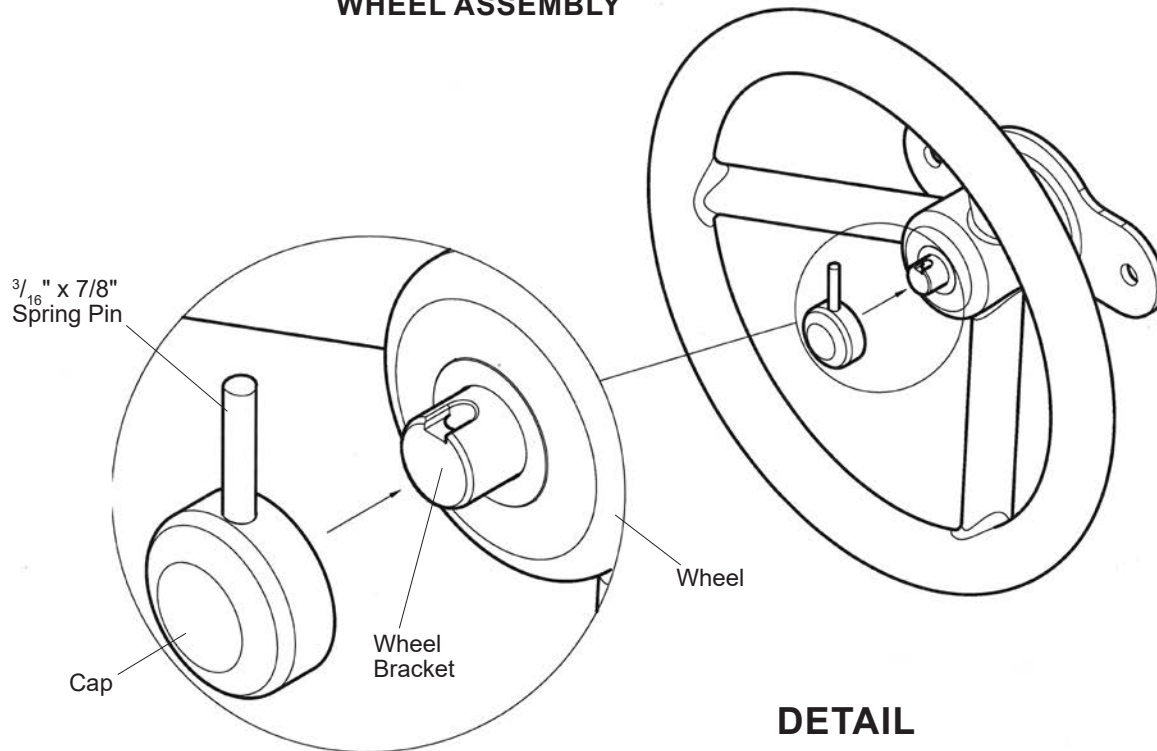


DETAIL PANEL ATTACHMENT (WITH BALCONY DECK)

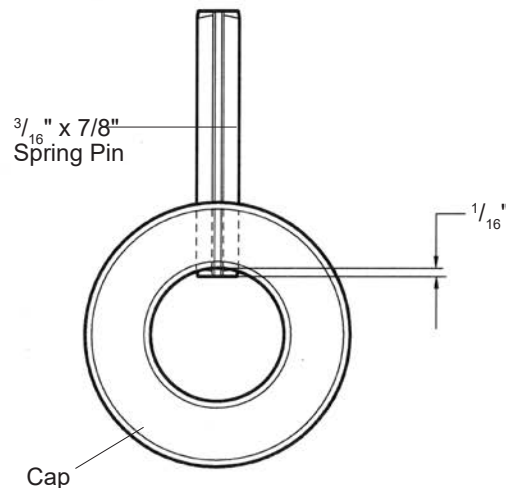




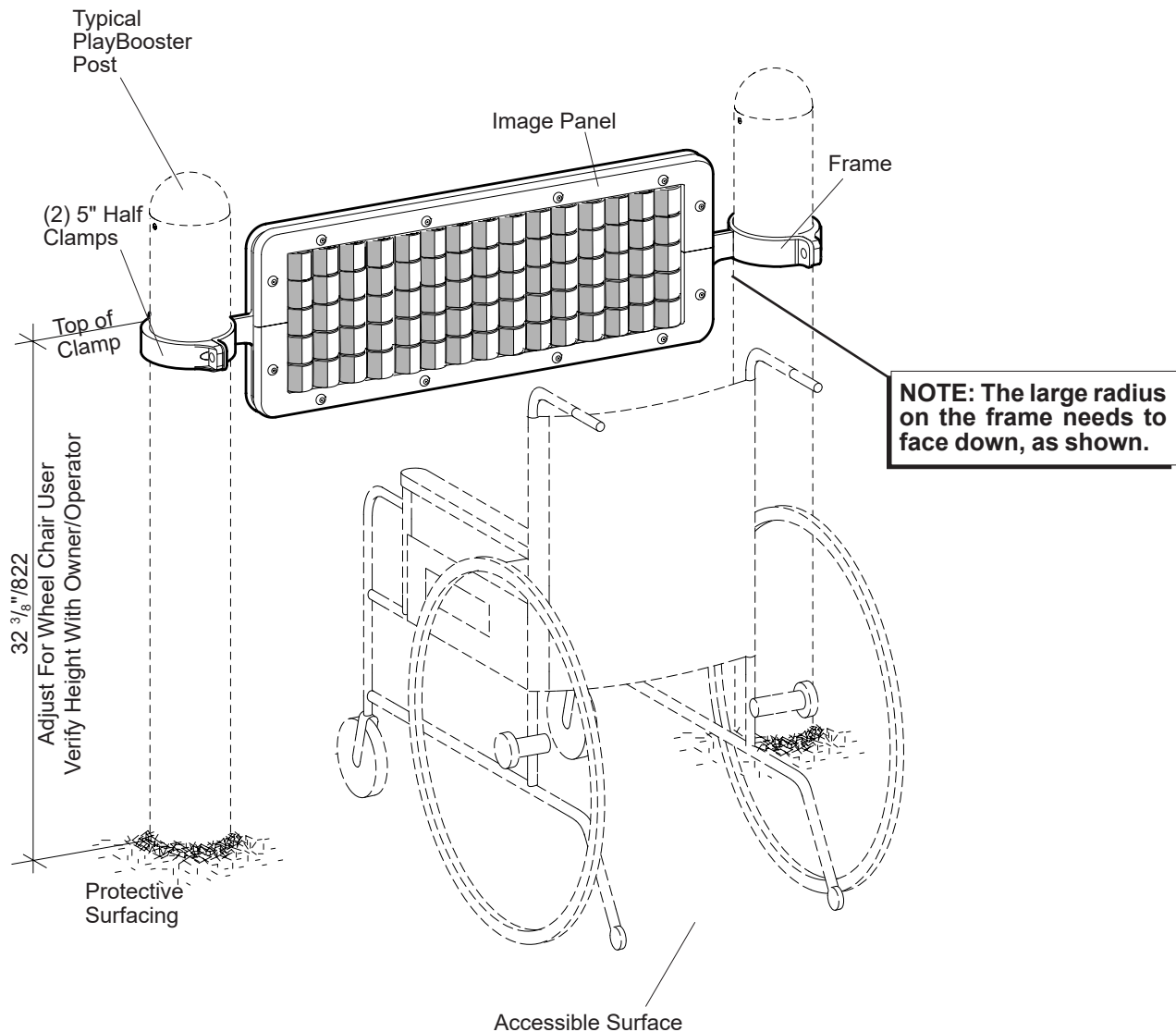
DETAIL WHEEL ASSEMBLY



DETAIL SPRING PIN INSERTION (CAP BACK VIEW)



NOTE: To assist in the alignment of the cap to the wheel bracket shaft, tap spring pin through cap approximately $\frac{1}{16}$ ". Orient spring pin to groove on wheel bracket shaft. Slide cap in place and tap spring pin through cap and shaft until flush



Parts List

Part#	Description	Qty.
127483	Frame, Specify Color.....	1
105327	5" Half Clamp, Specify Color	2
136751	Pivot Block Set.....	1
115460	1/2" x 11 7/16" Rod, Aluminum	15
100610	1/4" x 5/8" Drive Rivet, Specify Color.....	2
129065	Reach Image Panel Set, Specify Color	1
127460	Front Panel, Specify Color	2
127433	Back Panel, Specify Color.....	2
127438	Cover Panel, Specify Color	2
213030	Panel Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100199	3/8" x 2 1/4" BHCS w/Pin, SST	8
100351	3/8" Tee nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	12
113027	3/8" x 1 3/8" BHCS w/Pin, SST	4
100365	3/8" SAE Flat Washers, SST	4

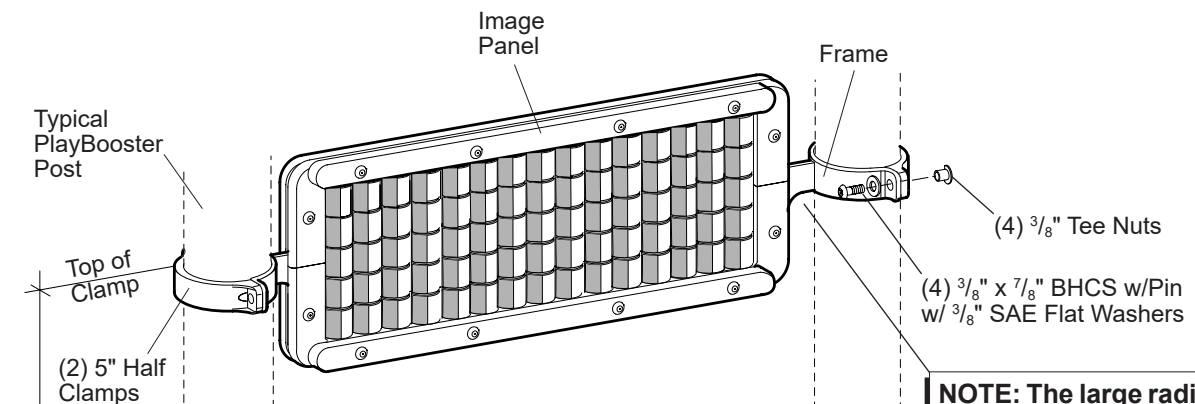
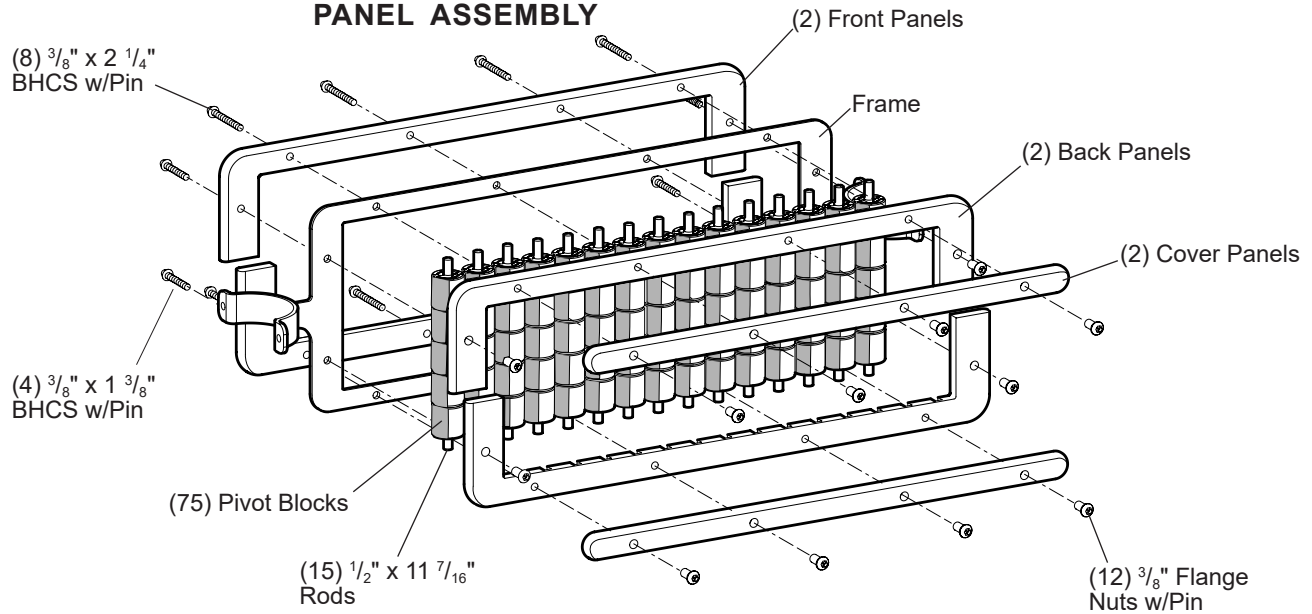
Specification

Image Panel:	Solid color Permalene® panel measures 34 1/4" wide x 13" high, color specified
Pivot Block:	U.V. stabilized high-density polyethylene, tan on one side and brown on the other.
Frame:	Weldment comprised of 1/4" steel. Finish: ProShield®, color specified
Half Clamp:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 1/2 man hour
Weight:	44 lbs.

Installation Instructions

- 1) Assemble panel using frame, pivot blocks, 1/2" x 11 7/16" rods, front panel, back panel, and cover panels as shown. Refer to the Panel Assembly Detail.
- 2) Attach the assembled panel to the posts at the height shown using 5" half clamps, 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" tee nuts. **NOTE:** The large radius on the frame needs to face down, as shown.
- 3) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 4) Install protective surfacing before users are allowed to play on the structure.

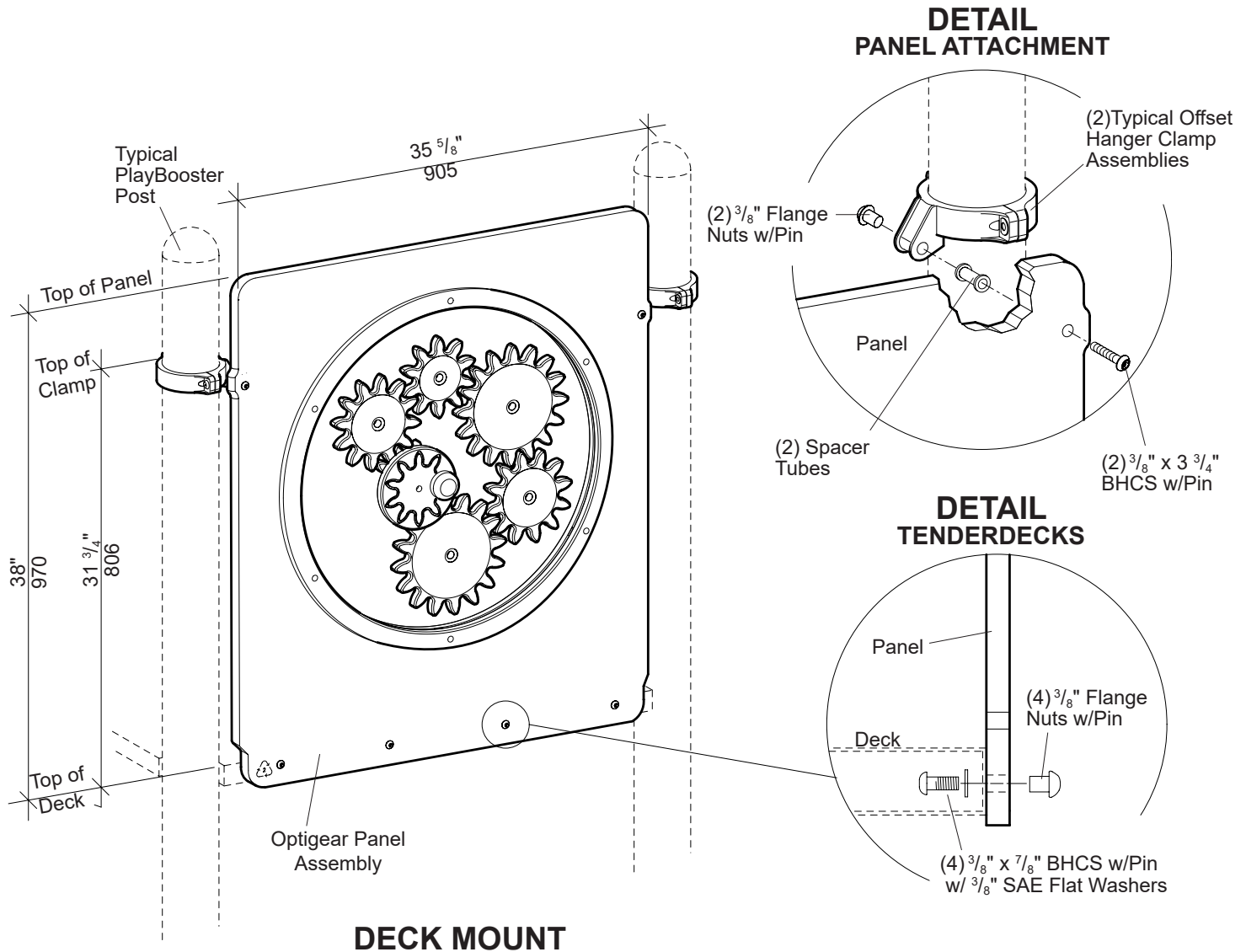
DETAIL PANEL ASSEMBLY



NOTE: The large radius on the frame needs to face down, as shown.

NOTE: If the Image Panel is located on a wheelchair accessible deck, a Curb (Model #191031) is required.

Protective Surfacing



NOTE:
The Optigear Panel is preassembled at the factory.

Parts List

Part#	Description	Qty.
ABOVE DECK		
105327	5" Half Clamp, Specify Color	2
113729	Offset Hanger Clamp, Specify Color	2
113468	Spacer Tube, Specify Color	2
181982	Optigear Panel Assembly, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
124900	Tenderdeck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	6
100365	3/8" SAE Flat Washer, SST	4
BELOW DECK		
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color	4
113468	Spacer Tube, Specify Color	2
113464	Angled Panel Bracket, Specify Color	1
181982	Optigear Panel Assembly, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
124947	Below Deck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100195	3/8" x 5/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST	8
100353	3/8" Flange Nut w/Pin, SST	6

Specification

Optigear Panel Assy.:	(Panels) Two color Permalene®, color specified. (Poly Panel) .236" thick clear polycarbonate, 3/8" threaded rod and 3/16" SST plate.
Angled Panel Brkt:	Weldment comprised of .190" thick 5052 aluminum formed angle with (2) 6061-T6 aluminum threaded tubes 1 1/8" O.D. x 1 1/2" long. Finish: ProShield®, color specified.
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified
Clamps:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Above Deck Approx. 3/4 man hour Below Deck Approx. 1 man hour
Weight:	Above Deck 59 lbs. Below Deck 65 lbs.

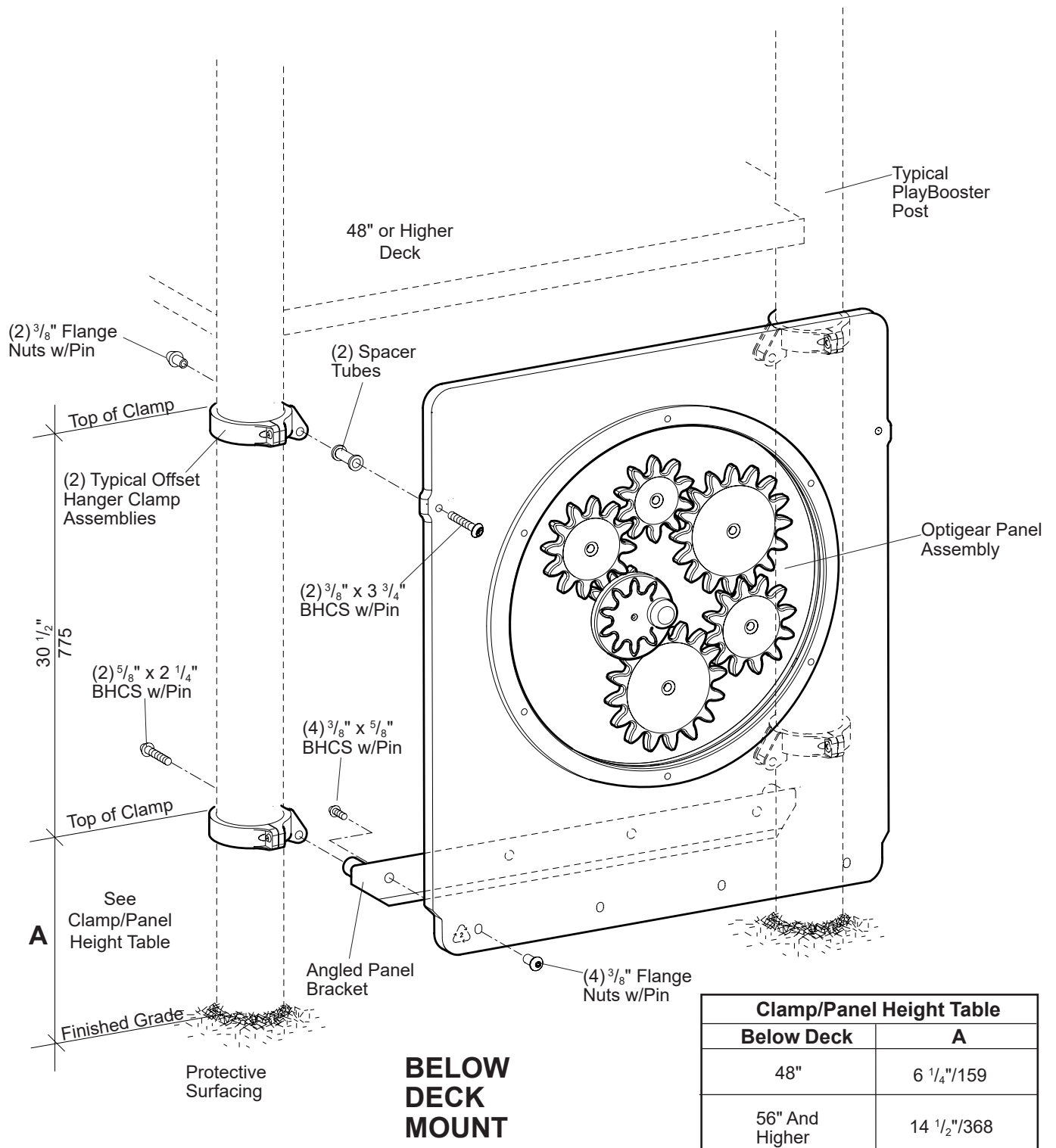
Installation Instructions

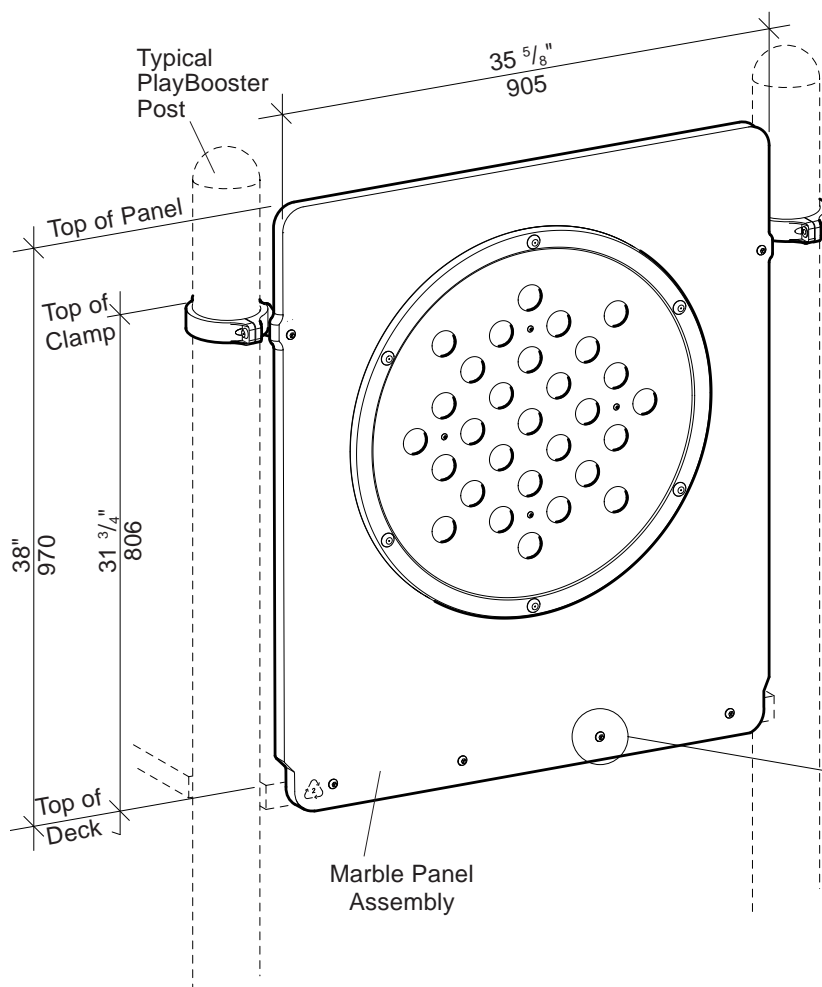
ABOVE DECK (See Sheet 1 of 2)

- 1) Attach panel assembly to the face of the deck using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin. See Detail.
- 2) Attach offset hanger clamp assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 3) Attach panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 4) Install protective surfacing before users are allowed to play on the structure.

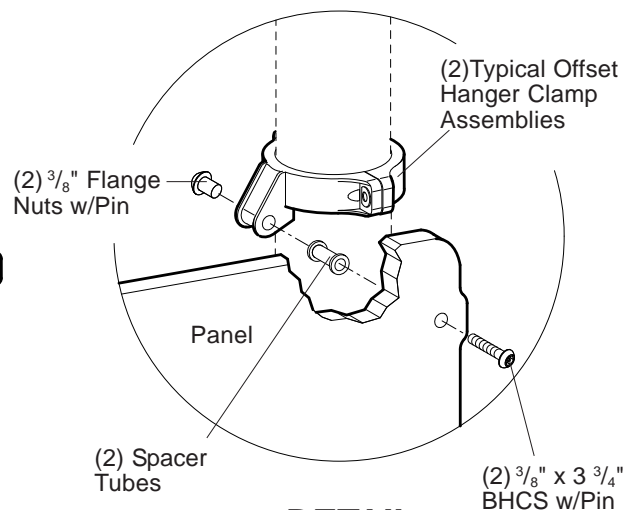
BELOW DECK (See Sheet 2 of 2)

- 1) Attach offset hanger clamp assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 2) Attach angled panel bracket to bottom of panel, using 3/8" x 5/8" BHCS w/pin and 3/8" flange nuts w/pin. See Below Deck Mount.
- 3) Attach angled panel bracket with panel to offset hanger clamp assemblies, using 5/8" x 2 1/4" BHCS w/pin. See Below Deck Mount.
- 4) Attach top of panel assembly to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Typical Attachment To Post Detail.
- 5) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Assembly sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.

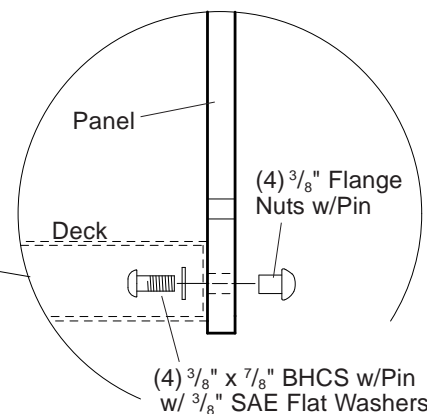




DETAIL PANEL ATTACHMENT



DETAIL TENDERDECKS



DECK MOUNT

NOTE:
The Marble Panel is preassembled at the factory.

Parts List

Part#	Description	Qty.
ABOVE DECK		
105327	5" Half Clamp, Specify Color	2
113729	Offset Hanger Clamp, Specify Color	2
113468	Spacer Tube, Specify Color	2
172698	Marble Panel Assembly, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
124900	Tenderdeck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	6
100365	3/8" SAE Flat Washer, SST	4
BELOW DECK		
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color	4
113468	Spacer Tube, Specify Color	2
113464	Angled Panel Bracket, Specify Color	1
172698	Marble Panel Assembly, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
124947	Below Deck Mounting Hardware Package	1
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100195	3/8" x 5/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST	8
100353	3/8" Flange Nut w/Pin, SST	6

Specifications

Marble Panel Assy.: (Panels) Two color Permalene®, color specified. (Poly Panel) Fabricated from .236" thick clear polycarbonate. (Marbles) 2" Diameter glass.

Angled Panel Brkt: Weldment comprised of .190" thick 5052 aluminum formed angle with (2) 6061-T6 aluminum threaded tubes 1 1/8" O.D. x 1 1/2" long. Finish: ProShield®, color specified.

Spacer Tube: Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified.

Offset Hanger Clamp Assembly: Cast aluminum. Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Installation Time: Above Deck Approx. 3/4 man hour
Below Deck Approx. 1 man hour

Weight: Above Deck 64 lbs.
Below Deck 70 lbs.

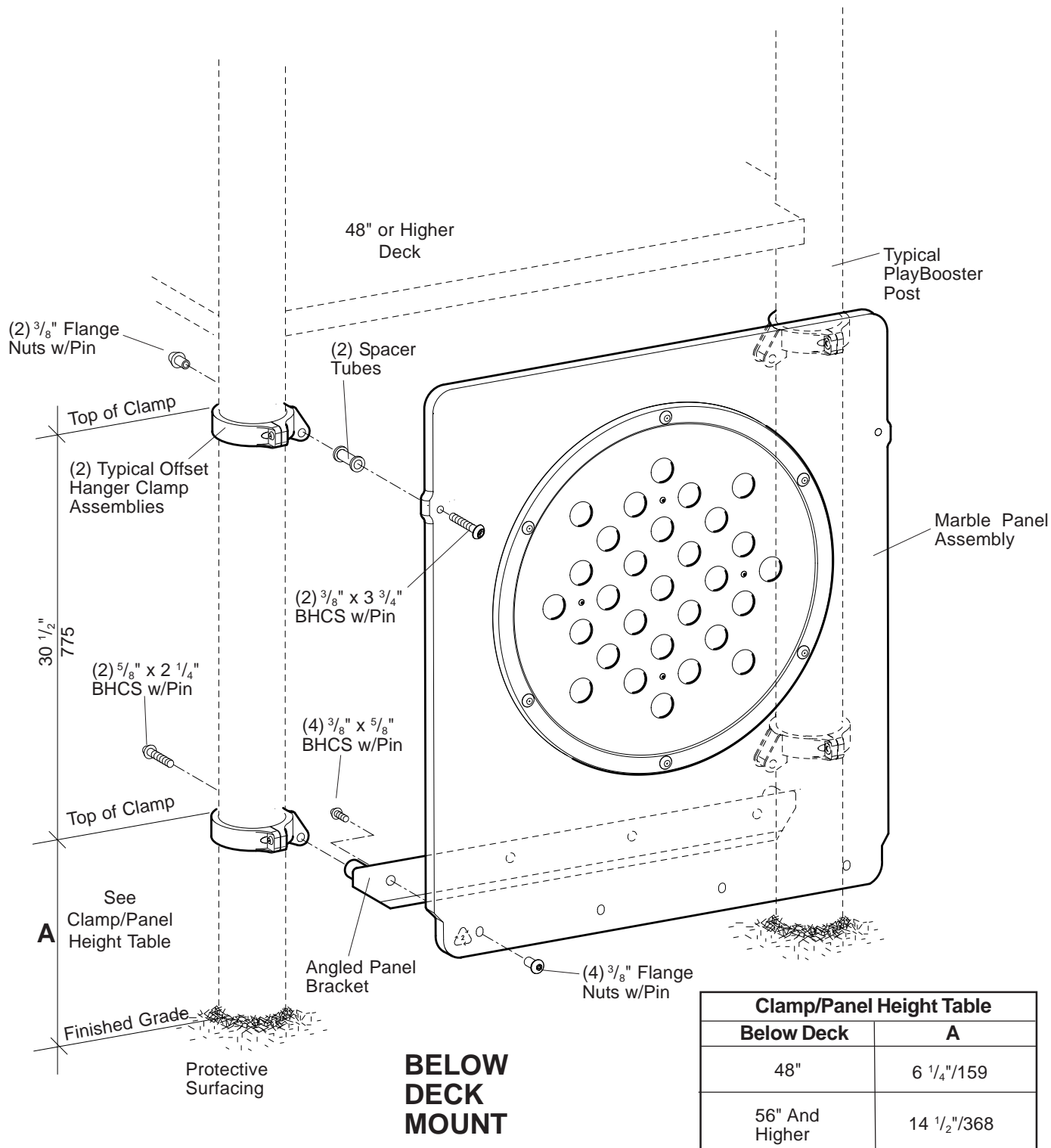
Installation Instructions

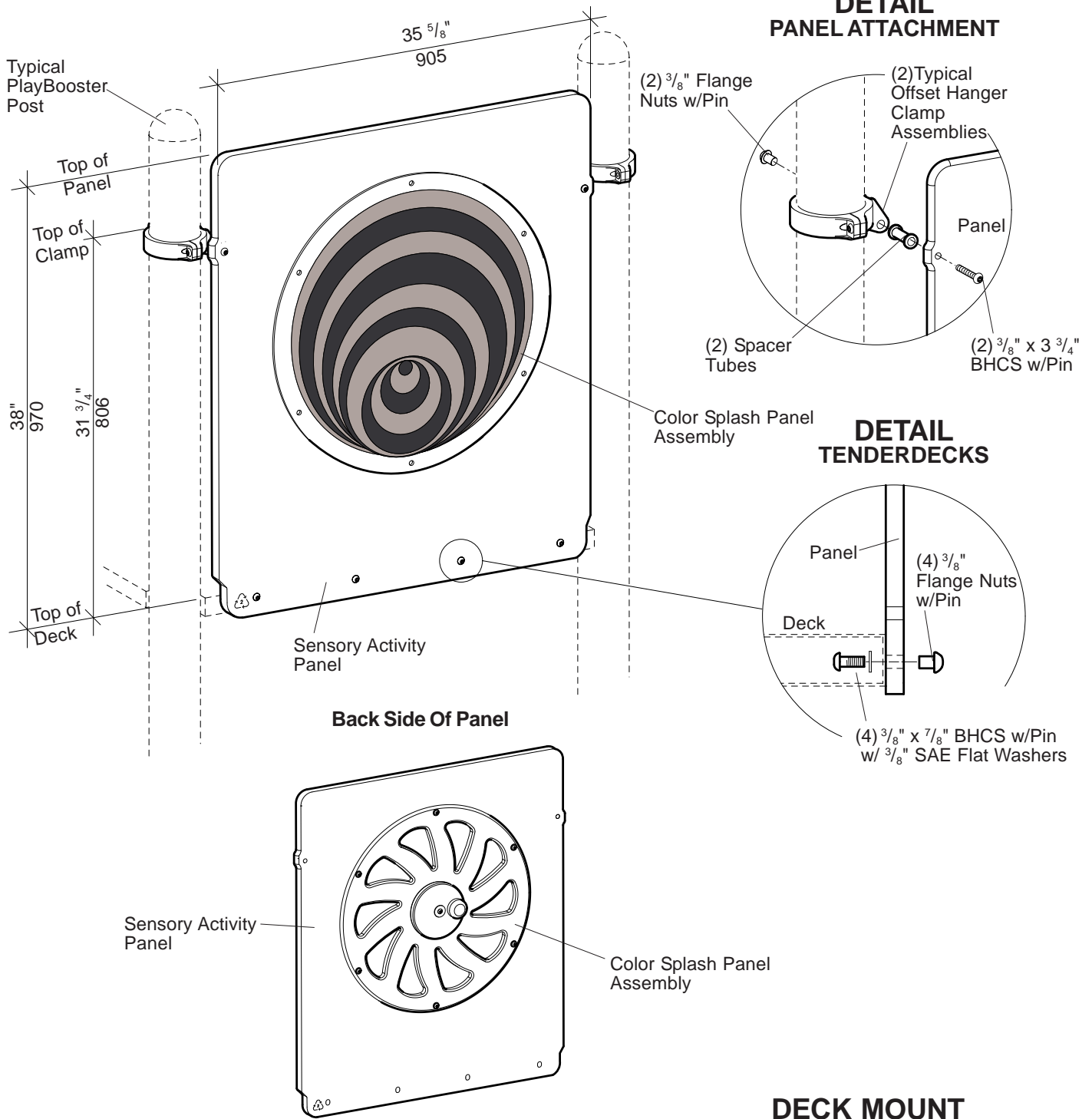
ABOVE DECK (See Sheet 1 of 2)

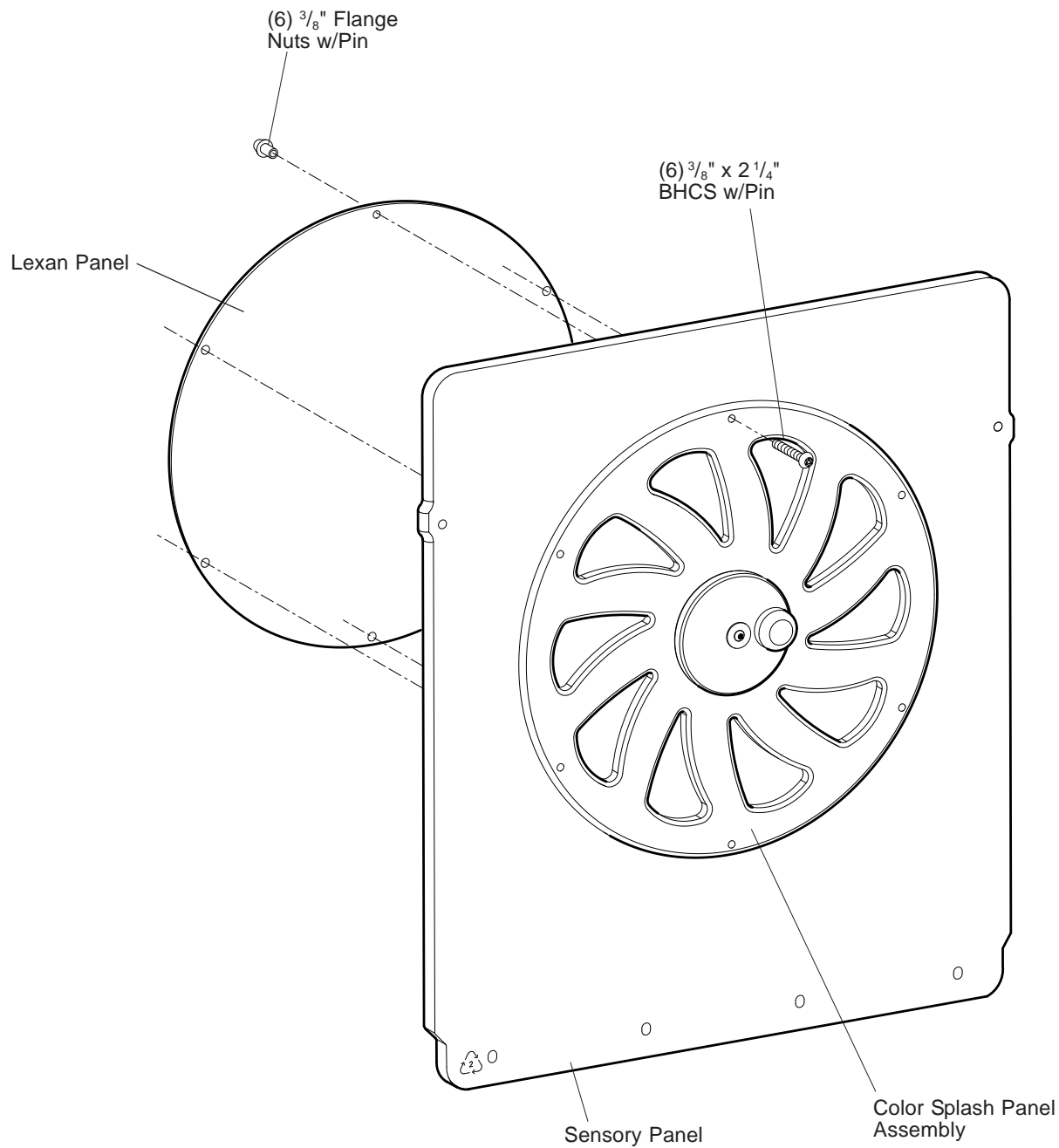
- 1) Attach panel to the face of the deck, using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin. See Detail.
- 2) Attach offset hanger clamp assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 3) Attach panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 4) Install protective surfacing before users are allowed to play on the structure.

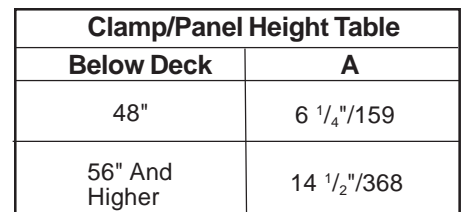
BELOW DECK (See Sheet 2 of 2)

- 1) Attach offset hanger clamp assemblies to posts at height shown, using half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 2) Attach angled panel bracket to bottom of panel, using 3/8" x 5/8" BHCS w/pin and 3/8" flange nuts w/pin. See Below Deck Mount.
- 3) Attach angled panel bracket with panel to offset hanger clamp assemblies, using 5/8" x 2 1/4" BHCS w/pin. See Below Deck Mount.
- 4) Attach top of panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Typical Attachment To Post Detail.
- 5) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Assembly sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.









Parts List

Part#	Description	Qty.
ABOVE DECK		
100610	1/4" x 3/8" Drive Rivet, AL/SST	2
105327	5" Half Clamp, Specify Color	2
113729	Offset Hanger Clamp, Specify Color	2
113468	Spacer Tube, Specify Color	2
173727	Sensory Activity Panel, Specify Color	1
178123	Color Splash Panel Assembly, Specify Color	1
124900 Tenderdeck Mounting Hardware Package		
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100351	3/8" Tee Nut, SST	4
100353	3/8" Flange Nut w/Pin, SST	6
100365	3/8" SAE Flat Washer, SST	4
178349 Color Splash Panel Hardware Package		
100199	3/8" x 2 1/4" BHCS w/Pin, SST	6
100353	3/8" Flange Nut w/Pin, SST	6
BELOW DECK		
100610	1/4" x 3/8" Drive Rivet, AL/SST	4
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color	4
113468	Spacer Tube, Specify Color	2
113464	Angled Panel Bracket, Specify Color	1
173727	Sensory Activity Panel, Specify Color	1
178123	Color Splash Panel Assembly, Specify Color	1
124947 Below Deck Mounting Hardware Package		
124460	3/8" x 3 3/4" BHCS w/Pin, SST	2
100195	3/8" x 3/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST	8
100353	3/8" Flange Nut w/Pin, SST	6
178349 Color Splash Panel Hardware Package		
100199	3/8" x 2 1/4" BHCS w/Pin, SST	6
100353	3/8" Flange Nut w/Pin, SST	6

Specifications

Color Splash Panel Assembly:	Assembly comprised of (Permalene® Panels), color specified. (Lexan Panel) 1/4" (6,35 mm) thick x 26 3/4" (679,45 mm) diameter. (Acrylic Panel) 1/8" (3,18 mm) thick x 26 3/4" (679,45 mm) diameter clear. (Color Wheel) .1875" (4,76 mm) thick x 23 7/16" (595,30 mm) diameter aluminum sheet. Finish: ProShield®, image is transferred into paint by the process of infusion. (Shaft) stainless steel. (Thrust Oilite Bearing) .125" (3,18 mm) thick x 2.875" (73,03 mm) diameter. (Sleeve Oilite Bearing) 1.25" (31,75 mm) diameter x .750" (19,05 mm) long.
Angled Panel Brkt:	Weldment comprised of .190" (4,82 mm) thick 5052 aluminum formed angle with (2) 6061-T6 aluminum threaded tubes 1 1/8" (28,58 mm) O.D. x 1 1/2" (38,1 mm) long. Finish: ProShield, color specified.

Sensory Activity

Panel: Permalene panel measures 35 5/8" (904,87 mm) wide x 41" (1041 mm) high, color specified.

Clamp: Cast aluminum. Finish: ProShield, color specified.

Spacer Tube: Made from 6061-T6 aluminum 7/8" (22,22 mm) O.D. x 1 11/16" (42,85 mm) long. Finish: ProShield, color specified.

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

Installation Time: Above Deck Approx. 3/4 man hour
Below Deck Approx. 1 man hour

Weight: Above Deck 83 lbs.
Below Deck 89 lbs.

Installation Instructions

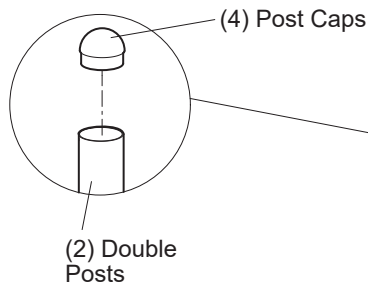
ABOVE DECK (See Sheet 1 of 2)

- 1) Attach color splash panel assembly to panel, using 3/8" x 2 1/4" BHCS w/pin and 3/8" flange nuts w/pin, as shown. **NOTE: Remove protective layer from lexan before installation.**
- 2) Attach panel to the face of the deck, using 3/8" x 7/8" BHCS w/pin with 3/8" SAE flat washers and 3/8" flange nuts w/pin. See Detail.
- 3) Attach offset hanger clamp assemblies to posts at height shown, using 5" half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 4) Attach panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 5) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.

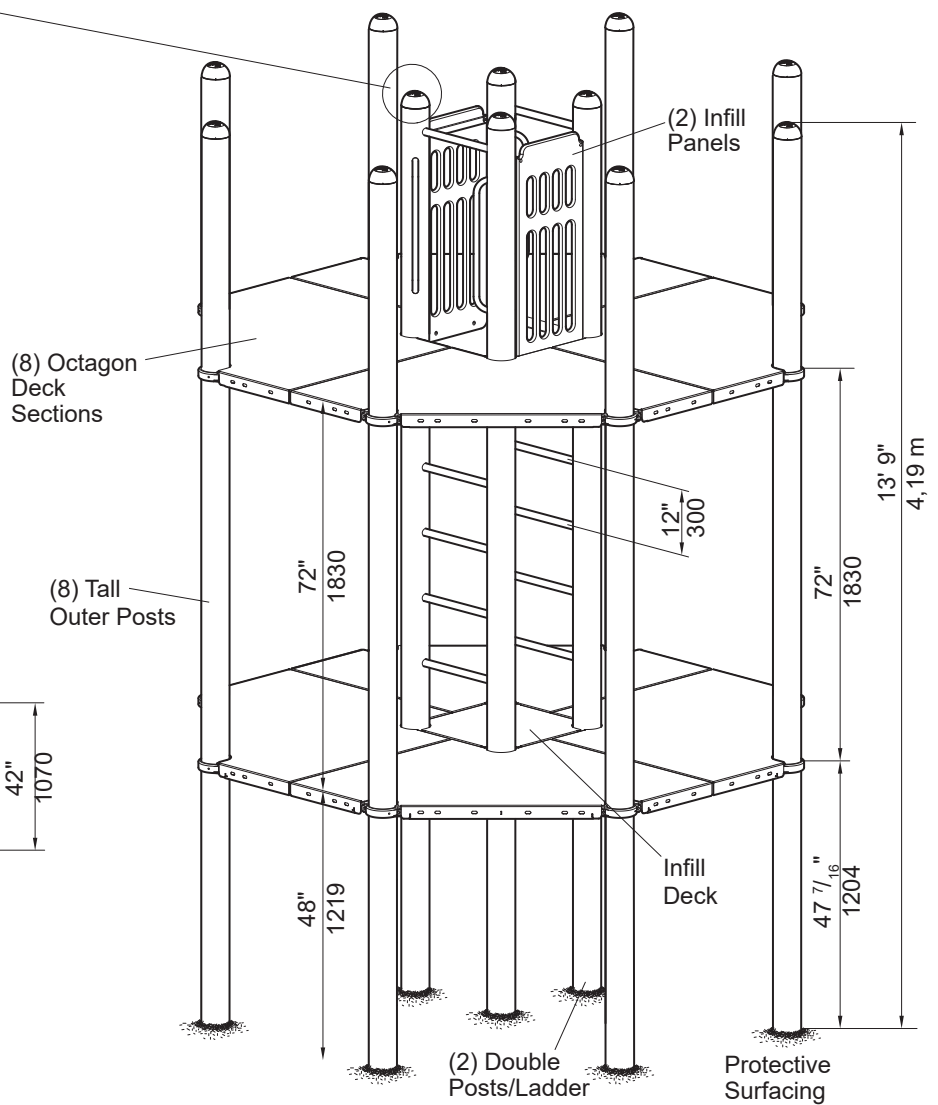
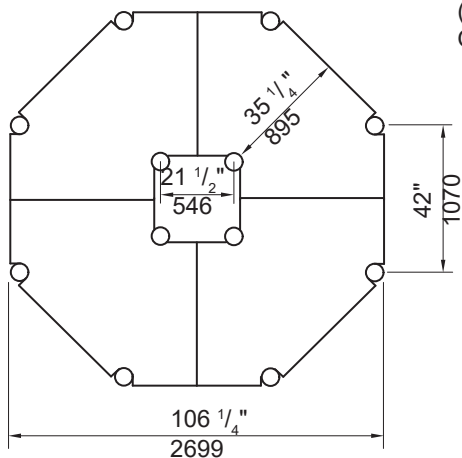
BELOW DECK (See Sheet 2 of 2)

- 1) Attach color splash panel assembly to panel, using 3/8" x 2 1/4" BHCS w/pin and 3/8" flange nuts w/pin, as shown. **NOTE: Remove protective layer from lexan before installation.**
- 2) Attach offset hanger clamp assemblies to posts at height shown, using 5" half clamps and 3/8" x 1 1/8" BHCS w/pin with 3/8" tee nuts. Refer To The Typical Offset Hanger Clamp Spec Sheet.
- 3) Attach angled panel bracket to bottom of panel, using 3/8" x 5/8" BHCS w/pin and 3/8" flange nuts w/pin. See Panel Attachment Detail.
- 4) Attach angled panel bracket with panel to offset hanger clamp assemblies, using 5/8" x 2 1/4" BHCS w/pin. See Below Deck Mount.
- 5) Attach top of panel to offset hanger clamp assemblies, using 3/8" x 3 3/4" BHCS w/pin, spacer tubes and 3/8" flange nuts w/pin. See Typical Attachment To Post Detail.
- 6) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offset Hanger Clamp Spec Sheet.
- 7) Install protective surfacing before users are allowed to play on the structure.

DETAIL POST CAP ATTACHMENT



PLAN VIEW



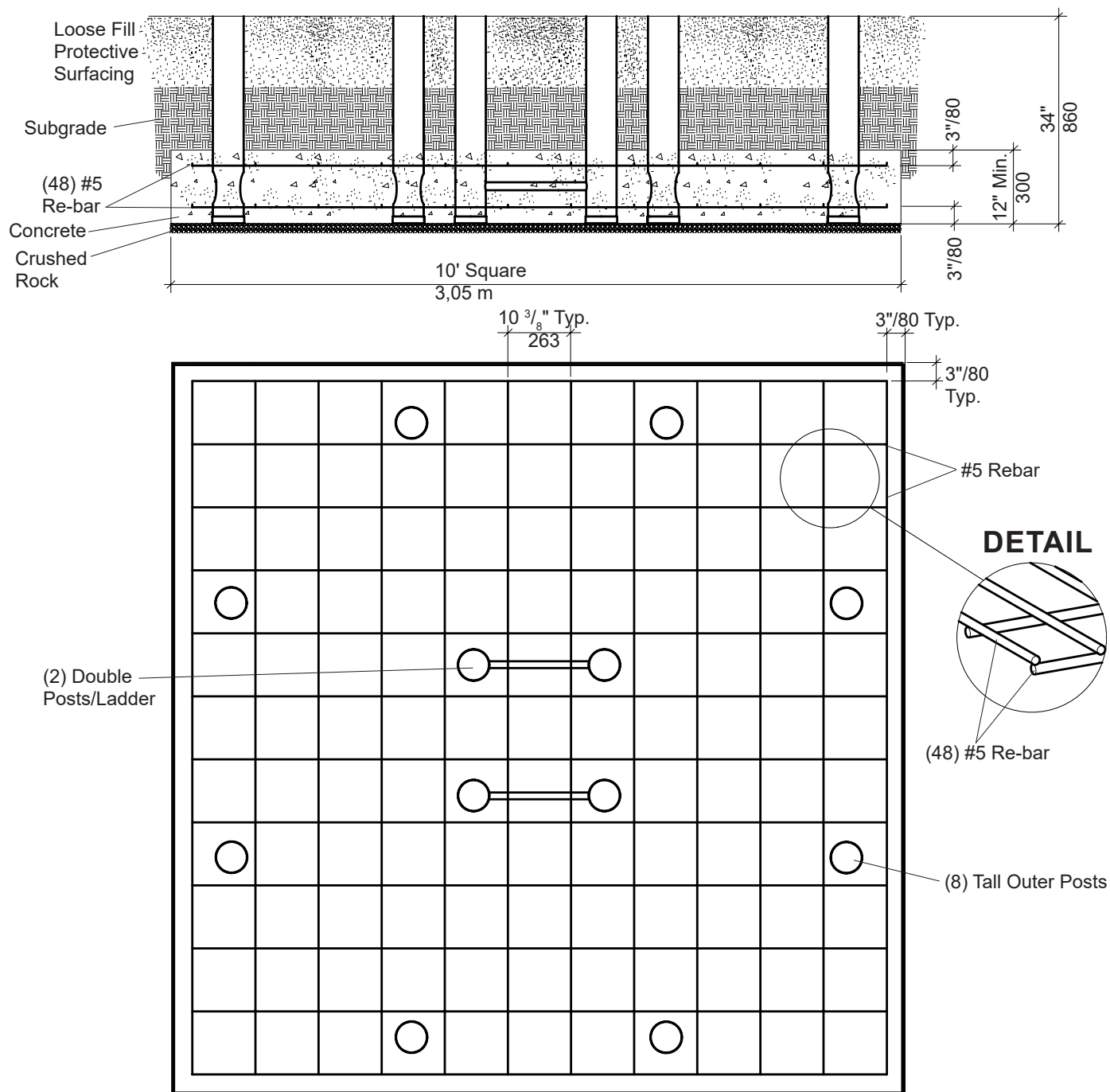


SAFETY NOTE

Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)

165848b

PLAN VIEW/FOOTING LAYOUT



NOTE: Place #5 re-bar 3" up from the bottom and 3" down from the top of the concrete, as shown. Rebar should be placed 3" in from the edge of the concrete on all sides and approximately 10 $\frac{3}{8}$ " on center.

PlayOdyssey®

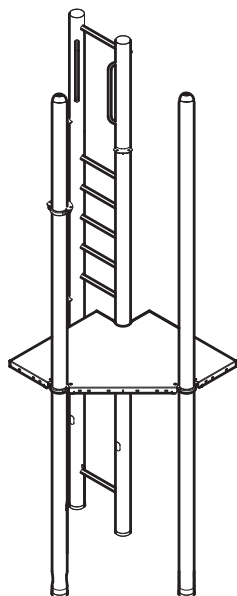
Concrete Footing With Re-Rod

601 7TH STREET SOUTH, DELANO, MINNESOTA 55328-8605 888-574-4678 LSI Install Help 888-438-6574 LSI Direct 763-972-5200 Int. FAX (763) 972-3185

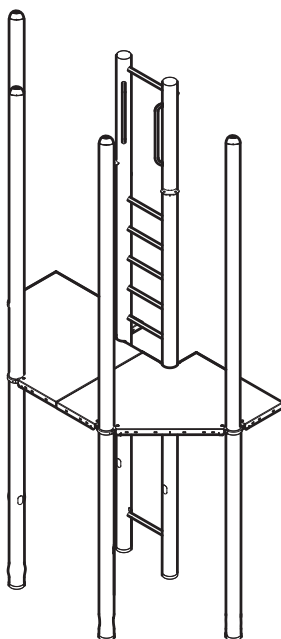
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**DETAIL
MAINSTRUCTURE ASSEMBLY SEQUENCE**

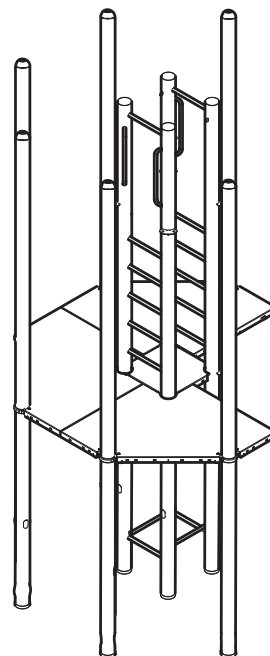
Step #1



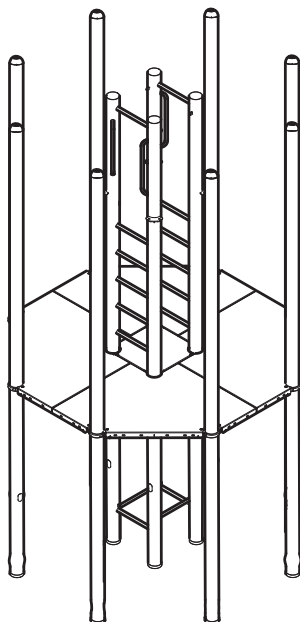
Step #2



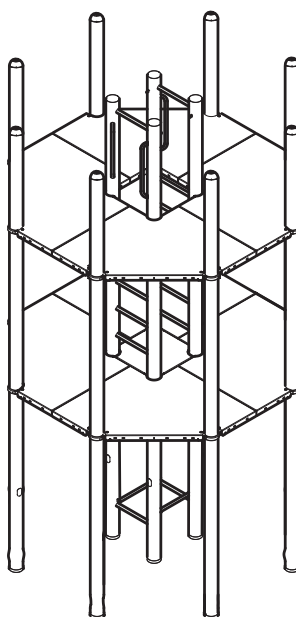
Step #3



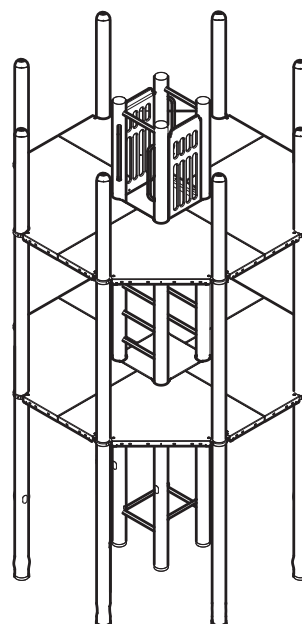
Step #4

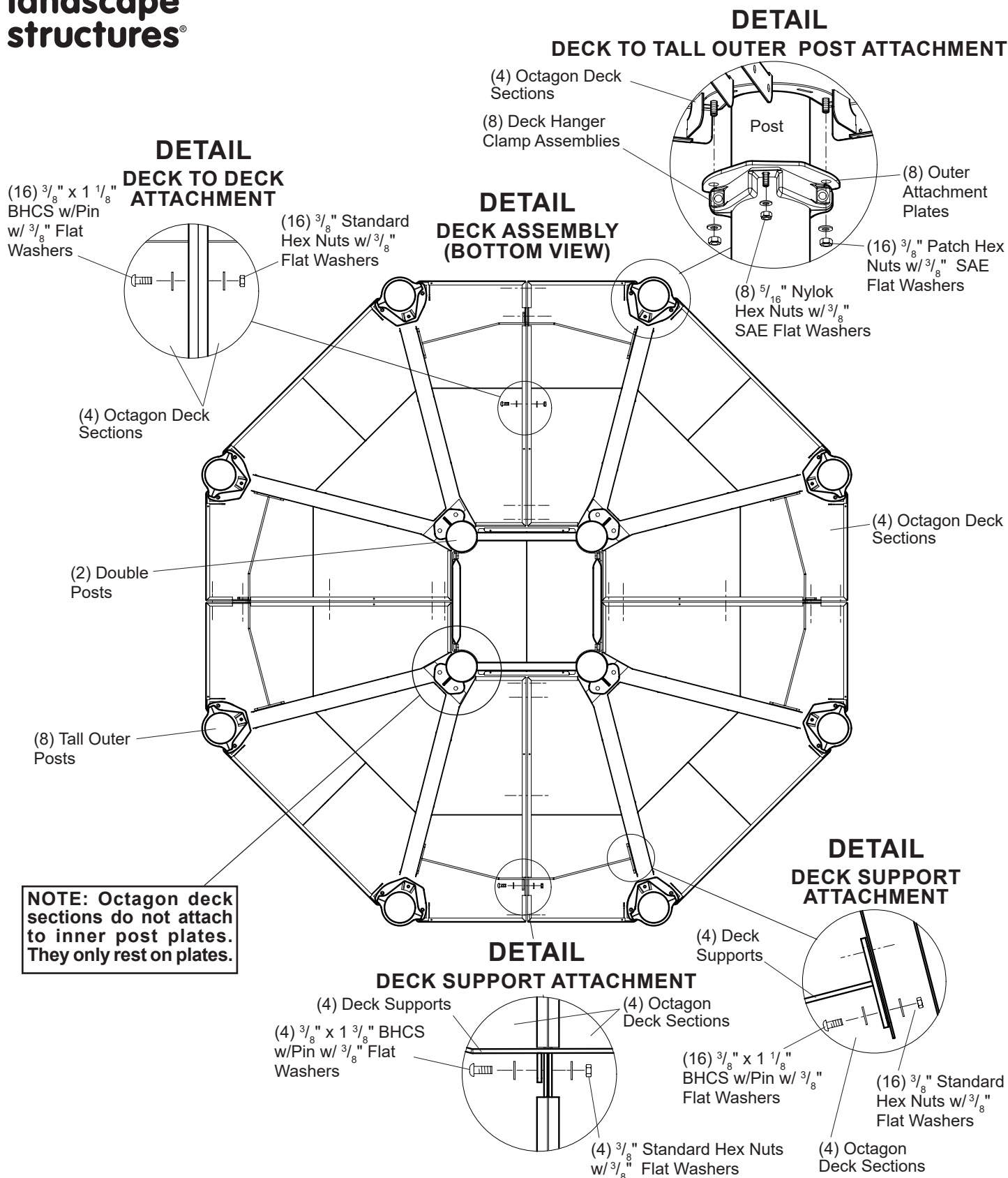


Step #5

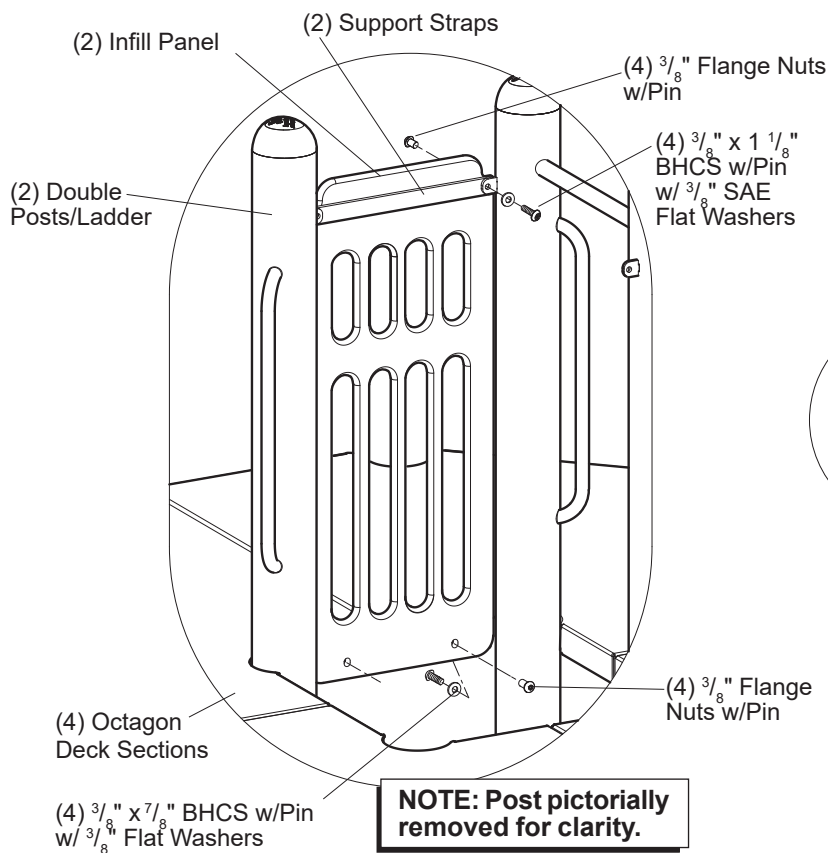


Step #6

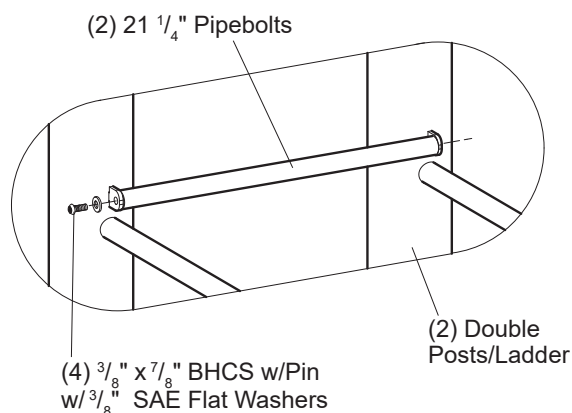




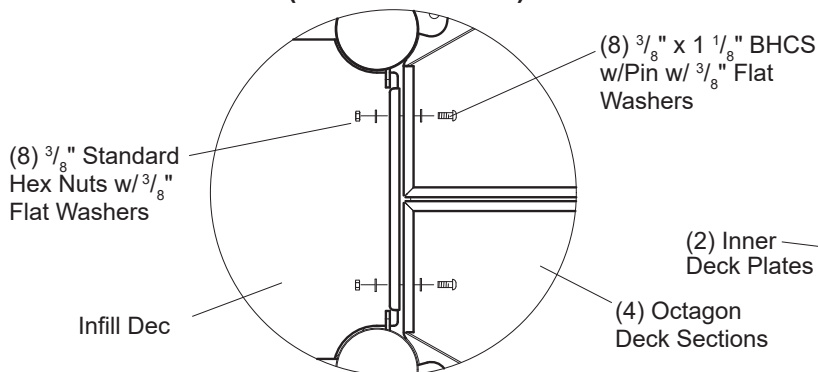
DETAIL INFILL PANEL ATTACHMENT



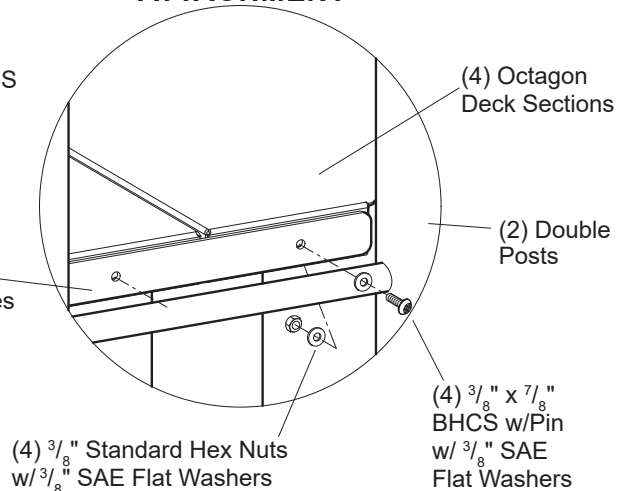
DETAIL PIPEBOLT ATTACHMENT



DETAIL INFILL DECK ATTACHMENT (BOTTOM VIEW)



DETAIL INNER UPPER DECK PLATE ATTACHMENT





PlayOdyssey 188689 PlayOdyssey® 10' Tower, w/o Roof

Parts List

Part#	Description	Qty.
100610	1/4" x 5/8" Drive Rivet, Al/SST	16
105327	5" Half Clamp, Specify Color	16
106022	Deck Hanger Clamp, Specify Color.....	16
128503	Infil Panel, Specify Color	2
136366	Infil Deck, Specify Color.....	1
149182	Support Strap, Specify Color.....	2
152982	Octagon Deck Section, Specify Color.....	8
165206	Outer Attachment Plate, Specify Color	16
185297	Double Post/Ladder, (DB), Specify Color.....	2
185298	Tall Outer Post, (DB), Specify Color	8
165501	Deck Support, Specify Color.....	8
165725	21 1/4" Pipebolt, Specify Color	2
165726	Inner Deck Plate, Specify Color.....	2
165895	Re-bar #5 x 114" long.....	48
161236	Post Cap, Specify Color	4
165599	PlayOdyssey Tower Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	12
100198	3/8" x 1 1/8" BHCS w/Pin, SST	108
100321	3/8" Hex Patch Nut, SST.....	32
100327	3/8" Standard Hex Nut, SST	84
100329	5/16" Nylok Hex Nut, SST	16
100351	3/8" T-Nut, SST.....	32
100353	3/8" Flange Nut w/Pin, SST.....	8
100362	3/8" Flat Washer, SST	164
100365	3/8" SAE Flat Washer, SST.....	64
113027	3/8" x 1 3/8" BHCS w/Pin, SST	8

Specification

Double Post: Weldment comprised of 5" O.D. x 11 GA (.120") galvanized steel tubing, 1.029" O.D. RS-20 (.070" - .080") galvanized steel tubing, 1.315" O.D. RS-20 (.080" - .090") galvanized steel tubing and 1/4" x 1 1/4" HRPO fla steel. Finish: ProShield®, color specified

Outer Post: Fabricated from 5" O.D. x 11 GA (.120") galvanized steel tubing and die cast 369.1 aluminum post cap. Finish: ProShield, color specified

Octagon Deck: Flange formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" diameter holes. Deck face has (4) slotted holes for face mounting components. The combined finishe size measures 2 5/8" x 106 1/4" x 106 1/4". Finish: TenderTuff®, color specified

Post Cap: Cast aluminum. Finish: ProShield, color specified

Re-bar #5: 5/8" Diameter.

Pipebolt: Fabricated from 1.125" O.D. 6061-T6 aluminum tube, with 3/8" internal threads.

Infill Deck: Flange formed from 12 GA (.105") sheet steel conforming to ASTM A1011. Standing surface is perforated with 5/16" diameter holes. The finishe size measures 2 5/8" x 24 3/8" x 24 3/8". Finish: TenderTuff color specified

Infill Panel: Solid color Permalene®, color specified

Inner Deck Plate: Fabricated from 1/4" HRPO steel sheet. Finish: ProShield, color specified

Support Strap: Fabricated from 1/4" x 1 1/4" HRPO fla steel. Finish:

ProShield, color specified

Clamps: Cast aluminum. Finish: ProShield, color specified

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specifi product installation/specifications)

Installation Time: Approx. 34 hours with 4 people minimum

Concrete Req.: Approx. 3.70 cu. yds.

Actual Size: 106 1/4" x 106 1/4" (2,70 m x 2,70 m)

Weight: 3048 lbs.

Fall Height: 120" (3,04 m) Deck Height

Installation Instructions

NOTE: To lift deck sections, a "Lull" type material handler is recommended.

- 1) Dig footing, and level ground as shown. Refer to the Plan View/Footing Layout.

Deck/Double Post Assembly

- 2) **Step #1** - Attach deck hanger clamps to outer posts at height shown, using 5" half clamps, $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin and $\frac{3}{8}$ " tee nuts. Refer to the Offse Hanger Clamp Assembly Spec Sheet.
- 3) Attach outer attachment plates to deck hanger clamps, using $\frac{5}{16}$ " nylok hex nuts with $\frac{3}{8}$ " SAE fla washers. Refer to Detail.
- 4) Stand double post/ladder and (2) tall outer posts upright in footing hole. **NOTE:** Rope may be used to tie off the double post. The use of rope will help keep the double post in plumb position, while attaching decks. Tie a rope (not supplied) on each side of the top ladder rung. The rope should be long enough to attach to a ground stake (not supplied). When the double post is in plumb position, pull the ropes tight, and attach to ground stakes.
- 5) Lift deck section and place onto outer attachment plates, and double post plate. Attach deck section to tall outer post attachment plates, using $\frac{3}{8}$ " patch hex nuts with $\frac{3}{8}$ " SAE fla washers. Refer to Detail.
- 6) **Step #2** - Stand (2) tall outer posts upright in footing hole. Lift deck section and place onto tall outer post attachment plates, and double post plate. Attach deck section to tall outer post attachment plates, using $\frac{3}{8}$ " patch hex nuts with $\frac{3}{8}$ " SAE fla washers. Refer to Detail.
- 7) **Step #3** - Attach infill deck to deck sections, using $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin with $\frac{3}{8}$ " fla washers and $\frac{3}{8}$ " standard hex nuts with $\frac{3}{8}$ " fla washers. Refer to the Infil Deck Attachment Detail.
- 8) Stand remaining double post and (2) tall outer posts upright in footing hole. Lift deck section and place onto tall outer post attachment plates, and double post plate. Attach deck section to tall outer post attachment plates, using $\frac{3}{8}$ " patch hex nuts with $\frac{3}{8}$ " SAE fla washers. Refer to Detail.
- 9) Attach 21 $\frac{1}{4}$ " pipebolts to double posts, using $\frac{3}{8}$ " x $\frac{7}{8}$ " BHCS w/pin and $\frac{3}{8}$ " SAE fla washers. Refer to the Pipebolt Attachment Detail.
- 10) **Step #4** - Stand remaining tall outer posts upright in footing hole. Lift deck section and place onto tall outer post attachment plates, and double post plate. Attach deck section to tall outer post attachment plates, using $\frac{3}{8}$ " patch hex nuts with $\frac{3}{8}$ " SAE fla washers. Refer to Detail.
- 11) Attach infill deck to deck sections, using $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin with $\frac{3}{8}$ " fla washers and $\frac{3}{8}$ " standard hex nuts with $\frac{3}{8}$ " fla washers. Refer to the Infil Deck Attachment Detail.
- 12) Attach (4) deck sections together, using $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin with $\frac{3}{8}$ " fla washers and $\frac{3}{8}$ " standard hex nuts with $\frac{3}{8}$ " fla washers. Refer to the Deck Assembly Detail.
- 13) Attach (4) deck supports to decks, using $\frac{3}{8}$ " x $1\frac{3}{8}$ " BHCS w/pin, $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin, $\frac{3}{8}$ " fla washers and $\frac{3}{8}$ " standard hex nuts. Refer to the Deck Assembly Detail.
- 14) **Step #5** - Attach remaining (4) deck sections to tall outer post attachment plates, using $\frac{3}{8}$ " patch hex nuts with $\frac{3}{8}$ " SAE fla t washers. Refer to Detail.

- 15) **Step #6** - Attach infil panels to double posts, using support straps, $\frac{3}{8}$ " flang nuts and $\frac{3}{8}$ " x $1\frac{1}{8}$ " BHCS w/pin with $\frac{3}{8}$ " SAE fla washers. Refer to the Infil Panel Attachment Detail.

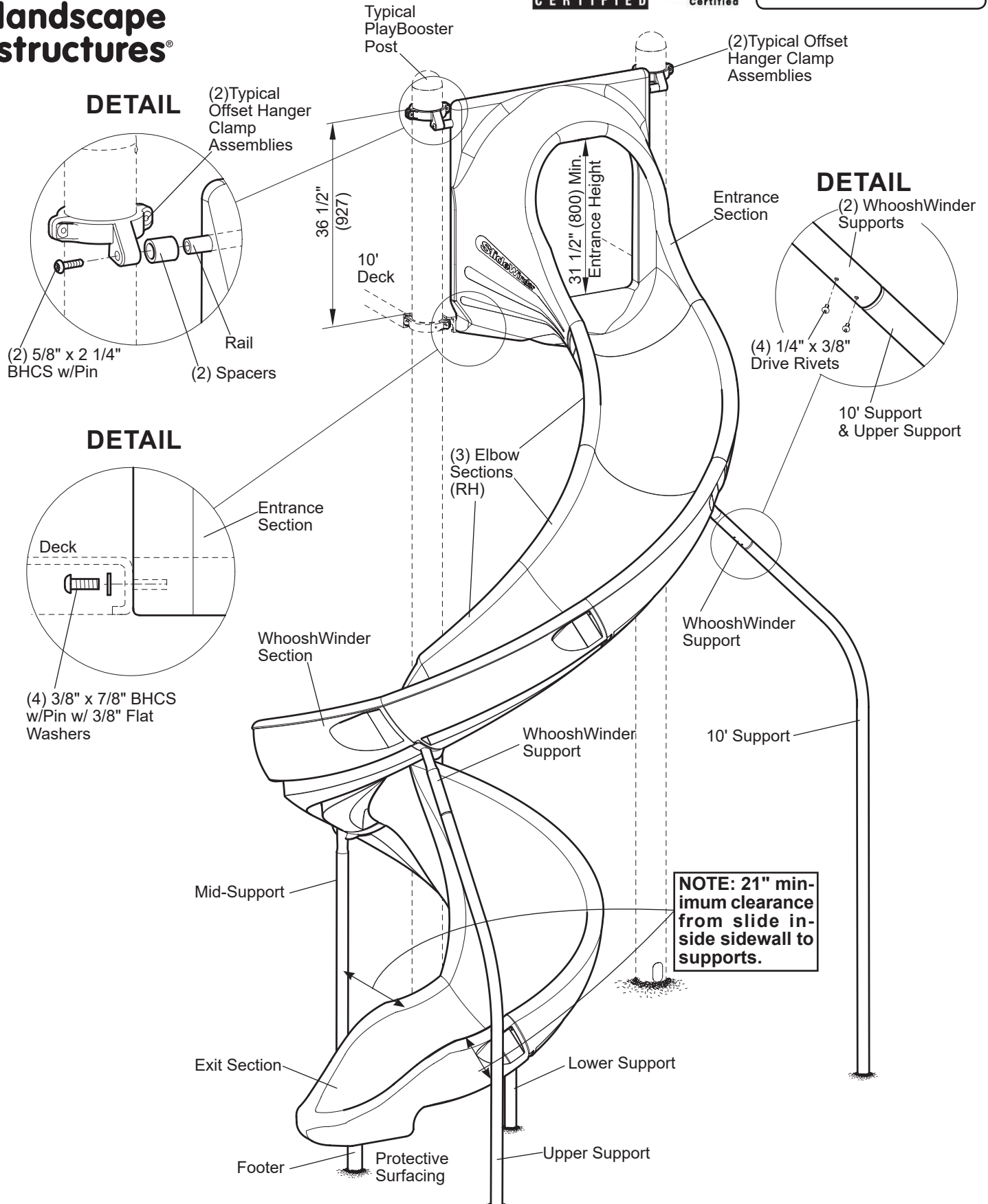
- 16) Attach (2) inner upper deck plates to deck sections, using $\frac{3}{8}$ " x $\frac{7}{8}$ " BHCS w/pin with $\frac{3}{8}$ " SAE fla washers and $\frac{3}{8}$ " standard hex nuts with $\frac{3}{8}$ " SAE fla washers. Refer to the Inner Deck Plate Attachment Detail.

Post Cap Assembly

- 17) Insert the post caps into the double posts.

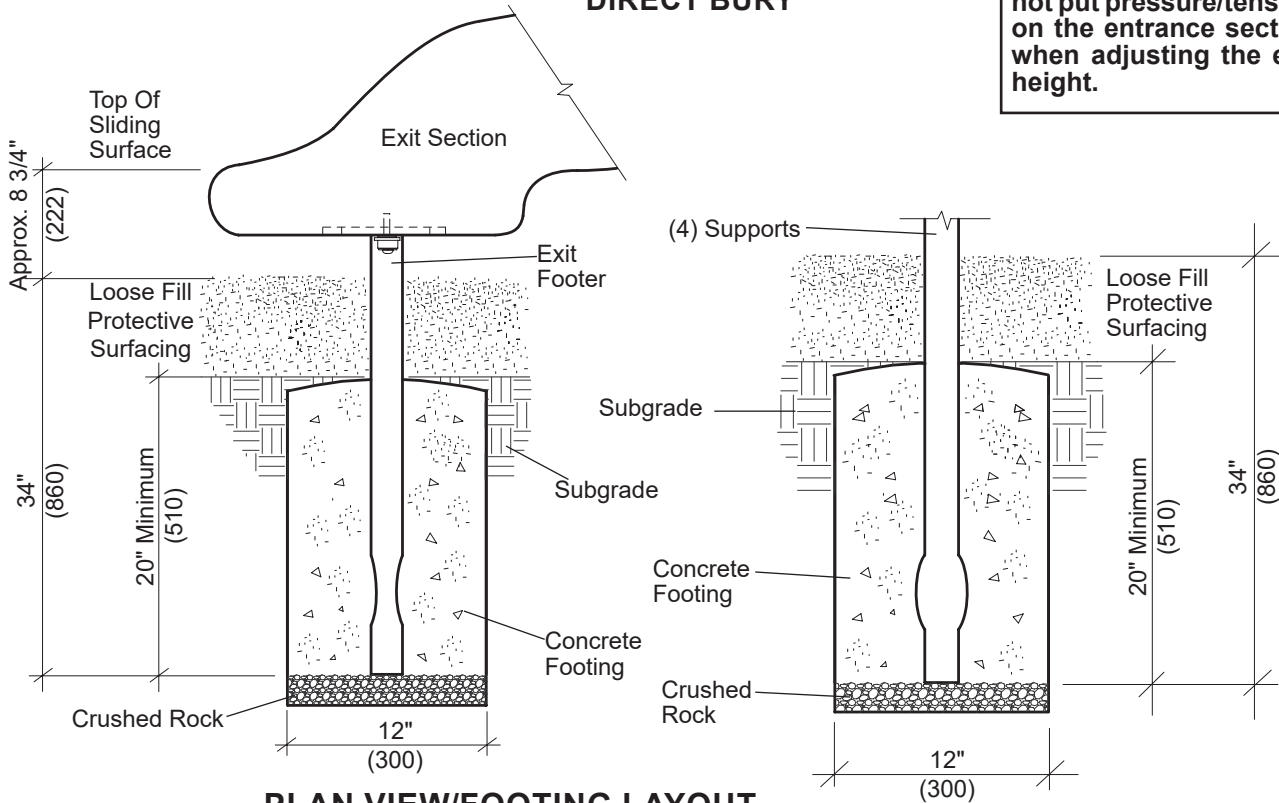
Finishing Steps

- 18) Install $\frac{1}{4}$ " x $\frac{5}{8}$ " drive rivets in all 5" half clamps. Refer to the Typical Offse Hanger Clamp Spec Sheet.
- 19) With posts plumb and decks level, pour concrete footing. Let concrete cure for 72 hours before use. Refer to the Plan View/Footing Layout. **NOTE:** Make sure Re-rod is placed in concrete as shown.
- 20) Install enclosures/play components as shown on your site drawings.
- 21) Install protective surfacing before users are allowed to play on the structure.

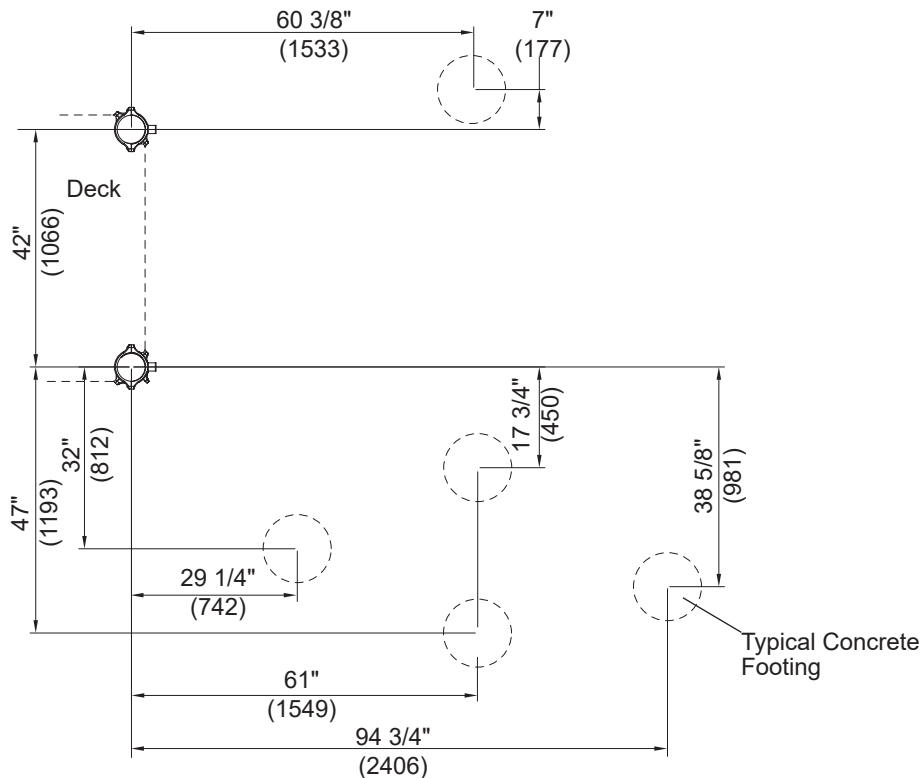


**DETAIL
DIRECT BURY**

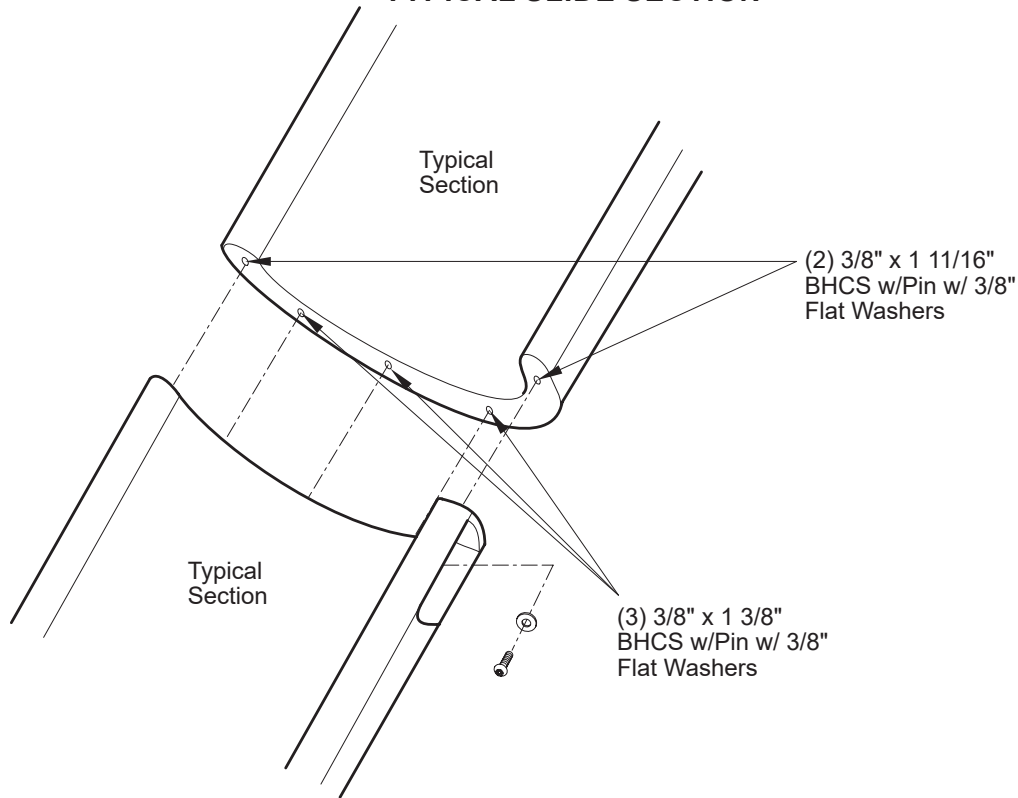
NOTE: Exit Heights may vary if the protective surfacing is not level. Do not put pressure/tension on the entrance section when adjusting the exit height.



PLAN VIEW/FOOTING LAYOUT

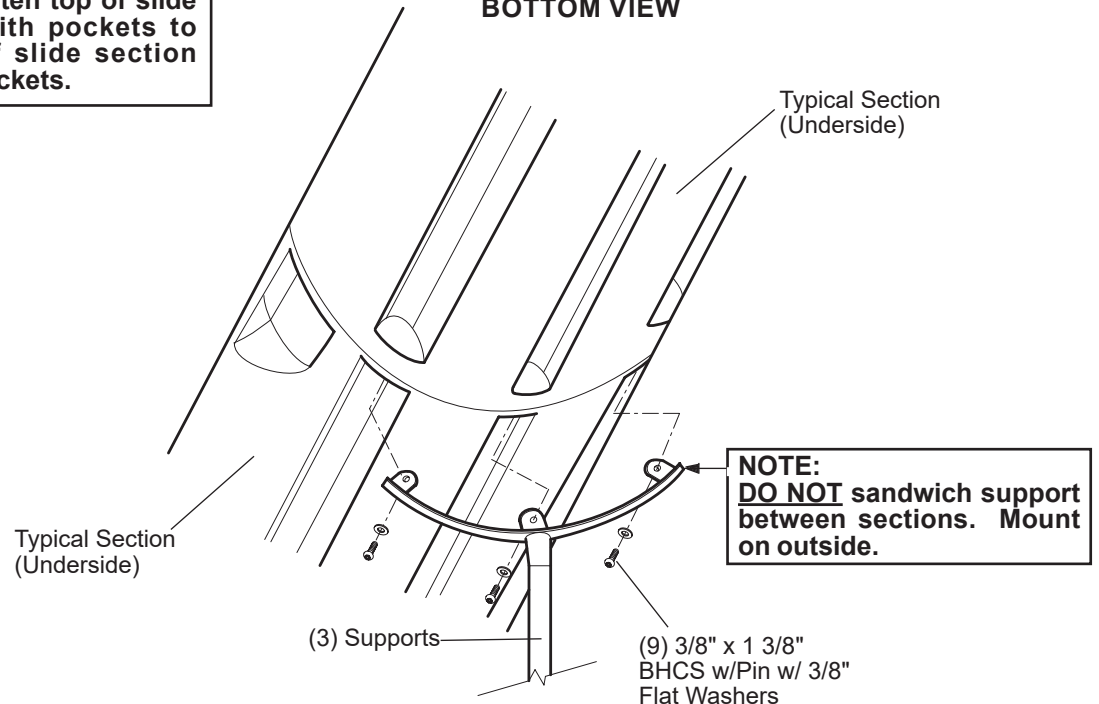


**DETAIL
TYPICAL SLIDE SECTION**



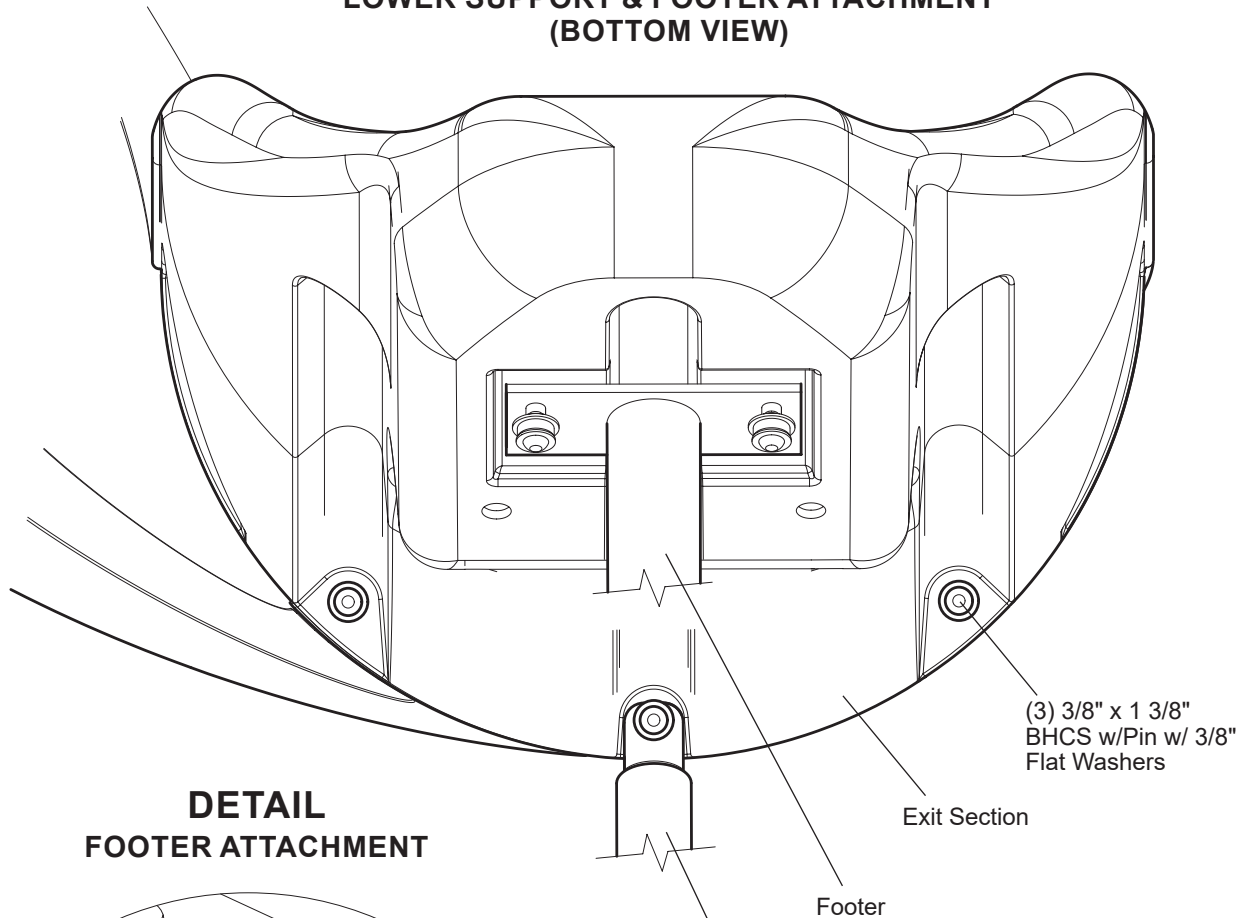
NOTE: Fasten top of slide section with pockets to bottom of slide section without pockets.

**DETAIL
MID-SUPPORT & WHOOSH WINDER SUPPORTS
BOTTOM VIEW**

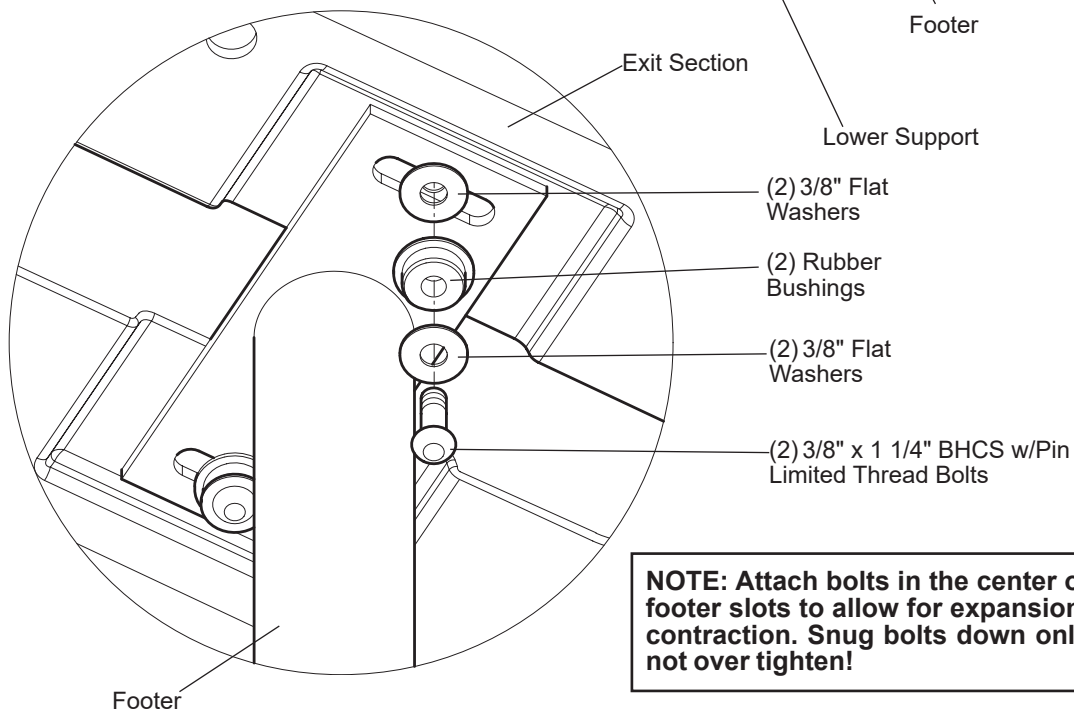


**NOTE:
DO NOT sandwich support between sections. Mount on outside.**

**DETAIL
LOWER SUPPORT & FOOTER ATTACHMENT
(BOTTOM VIEW)**



**DETAIL
FOOTER ATTACHMENT**



NOTE: Attach bolts in the center of the footer slots to allow for expansion and contraction. Snug bolts down only, do not over tighten!



PlayBooster® 222709 10' Tower WhooshWinder™ Slide, DB

Parts List

Part#	Description	Qty.
100583	40 7/16" Rail, Specify Color	1
100610	1/4" x 5/8" Drive Rivet, AL/SST	2
105327	5" Half Clamp, Specify Color	2
113729	Offse Hanger Clamp, Specify Color	2
124867	Elbow Section (RH), Specify Color	3
124876	Entrance Section, Specify Color	1
124877	Exit Section, Specify Color	1
128261	Exit Footer (DB), Specify Color	1
132443	Spacer Tube, Specify Color	2
221442	WhooshWinder Section, Specify Color	1
221939	Mid-Support (DB), Specify Color	1
221940	Upper Support (DB), Specify Color	1
221941	10' Support (DB), Specify Color	1
222246	WhooshWinder Support, Specify Color	2
225584	Lower Support (DB), Specify Color	1
224782	WhooshWinder 10' Tower Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100292	3/8" x 1 1/4" BHCS w/Pin Limited Thread, SST	2
100351	3/8" Tee Nut, SST	4
100362	3/8" Flat Washer, SST	36
111442	#871 Rubber Bushing	2
113027	3/8" x 1 3/8" BHCS w/Pin, SST	18
123224	3/8" x 1 11/16" BHCS w/Pin, SST	10
100611	1/4" x 3/8" BHCS w/Pin, SST	4

DB = Direct Bury

Specification

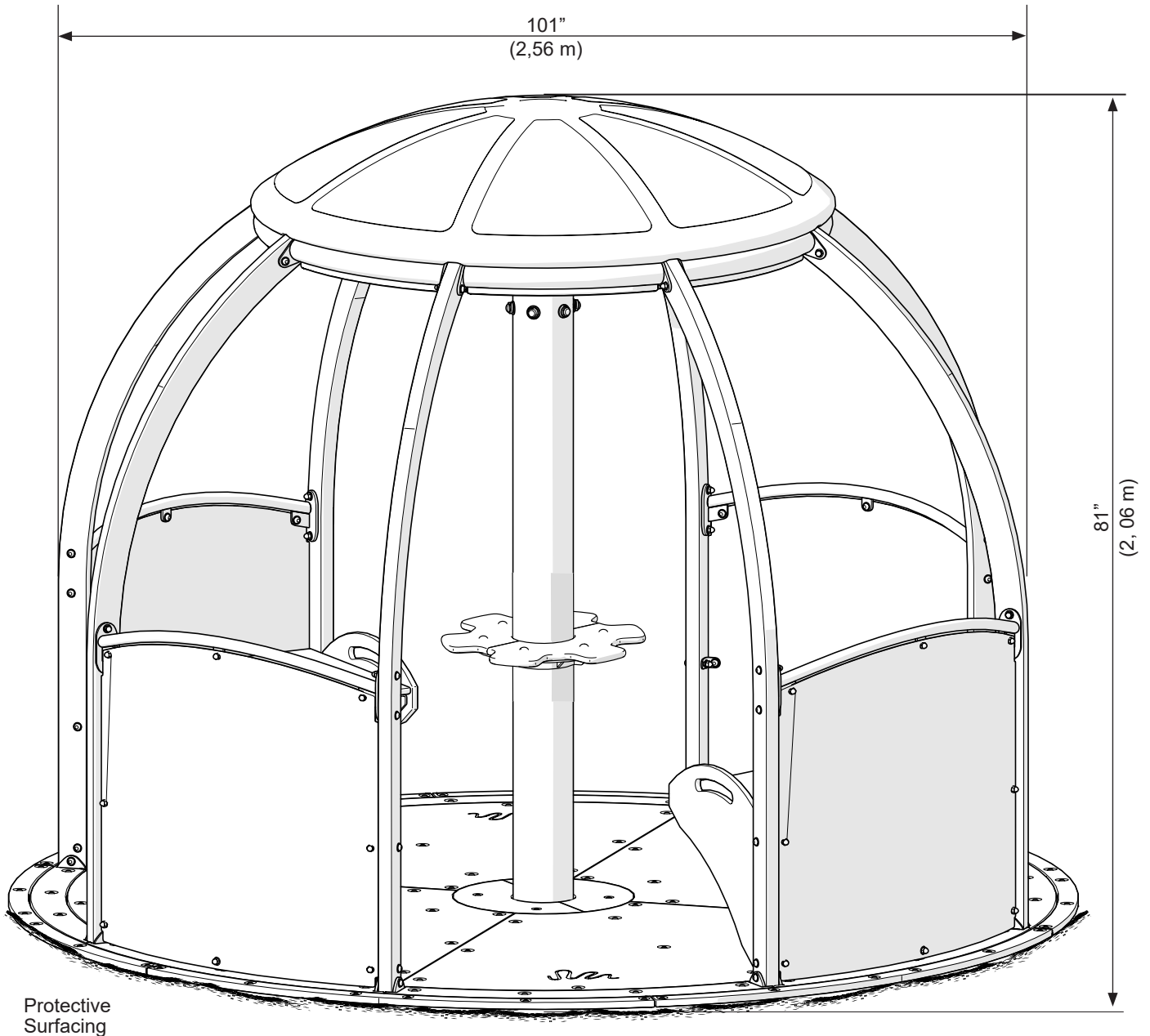
Slide Sections:	Rotationally molded from U.V. stabilized linear low density polyethylene, color specified
Rail:	1 1/8" (28,57 mm) O.D. 6005-T5 aluminum extrusion with 5/16" (7,92 mm) walls. Finish: ProShield®, color specified
Mid-Support :	Weldment comprised of 1.900" (48,26 mm) O.D. RS20 (.090"-.100") (2,28 mm - 2,54 mm) galvanized steel tubing and 3/16" (4,74 mm) x 1 1/4" (31,75 mm) zinc plated steel strap. Finish: ProShield, color specified
Lower Support:	Weldment comprised of 1.900" (48,26 mm) O.D. RS20 (.090"-.100") (2,28 mm - 2,54 mm) galvanized steel tubing and 1/4" (6,35 mm) fla steel. Finish: ProShield, color specified
10' Support:	Weldment comprised of 1.900" (48,26 mm) O.D. RS20 (.090"-.100") (2,28 mm - 2,54 mm) galvanized steel tubing. Finish: ProShield, color specified
Spacer Tube:	Fabricated from 1.312" (33,33 mm) O.D. x 16 Ga. (.065") (1,65 mm) steel tubing. Finish: ProShield, color specified
Exit Footer:	Weldment comprised of 2.375" (60,32 mm) O.D. RS20 (.095"-.105") (2,41 mm-2,66 mm) galvanized steel tubing and 1/4" (6,35 mm) x 3" (76,2 mm) x 7 1/2" (190,5 mm) mounting plate. Finish: ProShield, color specified
Offset Hanger Clamp Assy.:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specifi product installation/specifications)
Installation Time:	Approx. 7 labor hours
Concrete Req.:	DB Approx. 6.55 cu. ft.
Weight:	344 lbs.
Fall Height:	Deck Height
Area Req:	8' (2,43 m) minimum use zone at exit.

Installation Instructions

- 1) Refer to the Plan View/Footing Location for location of footings.
- 2) **(Direct Bury)** Dig footing holes as shown. Refer to the Direct Bury Detail.
- 3) Place 40 7/16" rail in entrance section, place spacer tubes over each end of the 40 7/16" rail, attach offse hanger clamps using 5/8" x 2 1/4" BHCS w/Pin.
- 4) Fasten WhooshWinder sections and supports together loosely starting in the middle and working your way to the outside of each section, using 3/8" x 1 3/8" BHCS w/Pin with 3/8" fla washers on the 3 inside holes and 3/8" x 1 11/16" BHCS w/pin with 3/8" fla washers on the 2 outside holes. When all bolts are started, pull the tops flus with each other and tighten. Refer to the Typical Slide Section Detail.
- 5) Attach exit footer to exit section. Attach lower support to exit section and WhooshWinder section. **NOTE: Attach bolts in the center of the slots to allow for expansion and contraction. Snug bolts down only, do not over tighten. Refer to the Footer Attachment Detail.**
- 6) With SlideWinder fully assembled, attach entrance section to the face of the deck using 3/8" x 7/8" BHCS w/Pin and 3/8" fla washers.
- 7) Attach offse hanger clamps to posts using 5" half clamps, 3/8" x 1 1/8" BHCS w/Pin and 3/8" w/Pin tee nuts. Refer to the Typical Offse Hanger Clamp Spec Sheet.
- 8) Insert 10' support and upper support into WhooshWinder supports. With supports plumb, drill through WhooshWinder supports and into upper support and 10' support using a 1/4" (Letter F) drill bit. Insert rivets. Refer to the Typical Mid-Support Detail.
- 9) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Offse Hanger Clamp Spec Sheet.
- 10) With supports plumb pour concrete footings. Allow concrete footings to cure for a minimum of 72 hours before users are allowed to play on the structure.
- 11) Install protective surfacing before users are allowed to play on the structure.

SAFETY NOTE

Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)

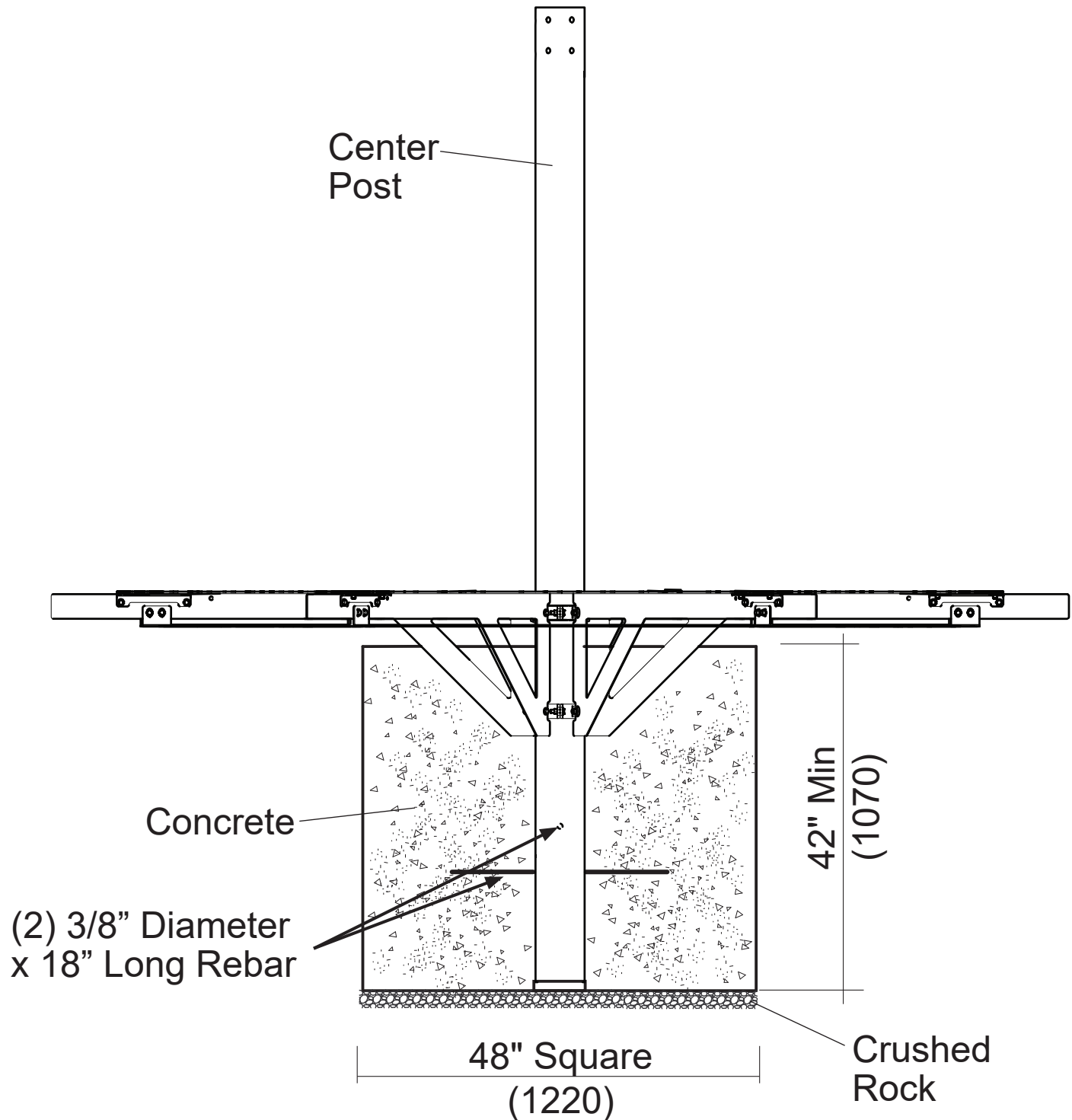


Scan the QR Code
to the right, or
type the URL into
a browser to view
the video

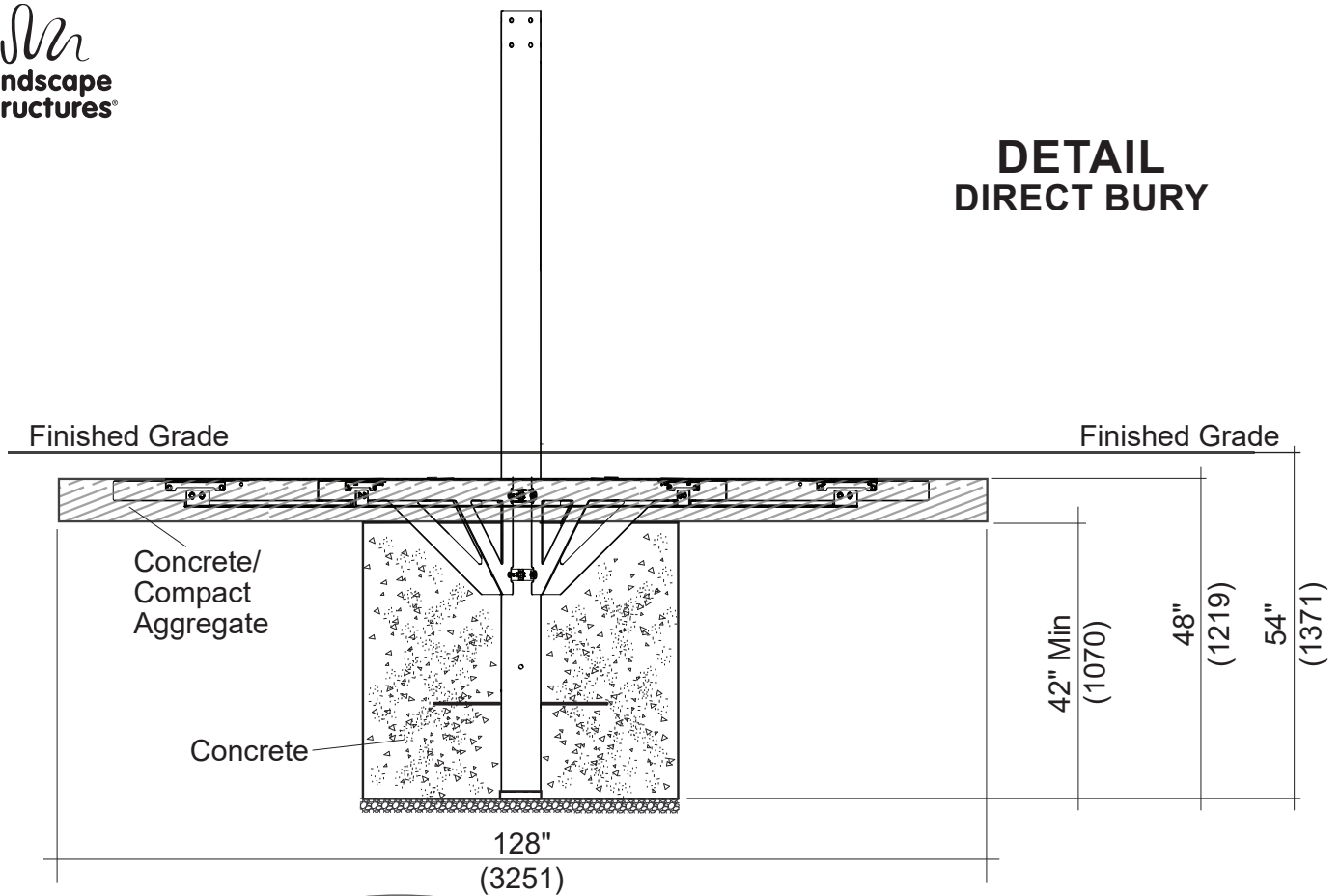


<https://bit.ly/2ESCwd0>

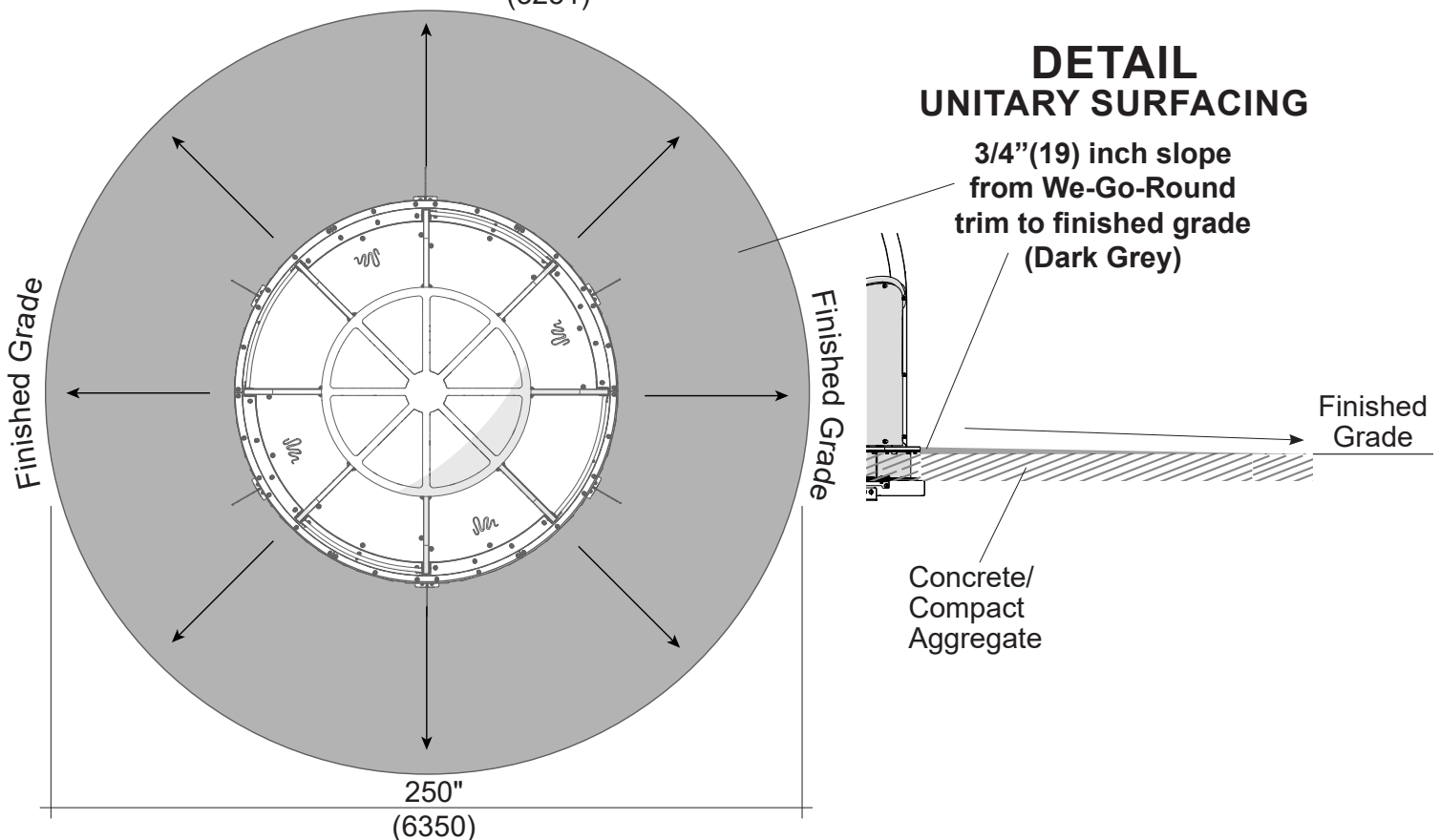
DETAIL DIRECT BURY



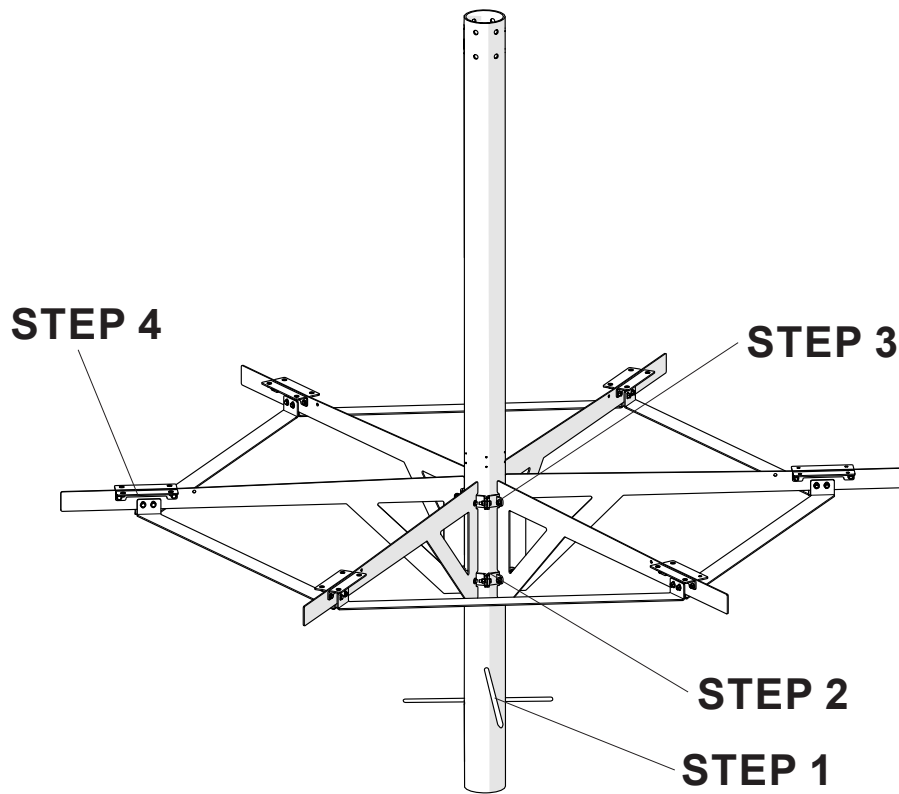
DETAIL DIRECT BURY



DETAIL UNITARY SURFACING

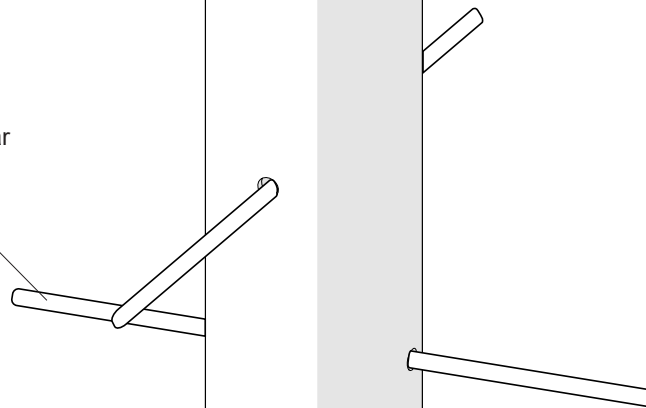



FOUNDATION I



STEP 1

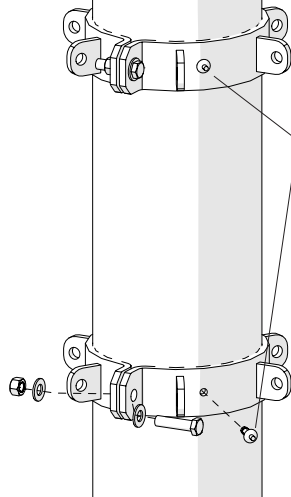
(2) 3/8" Diameter x 18" Long Rebar



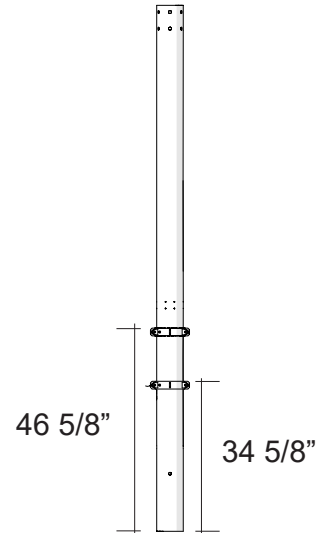
1x  6.0 OD x .25" x 119.50" Post (289361)




2x  3/8" x 18" Rebar (222399)

STEP 2



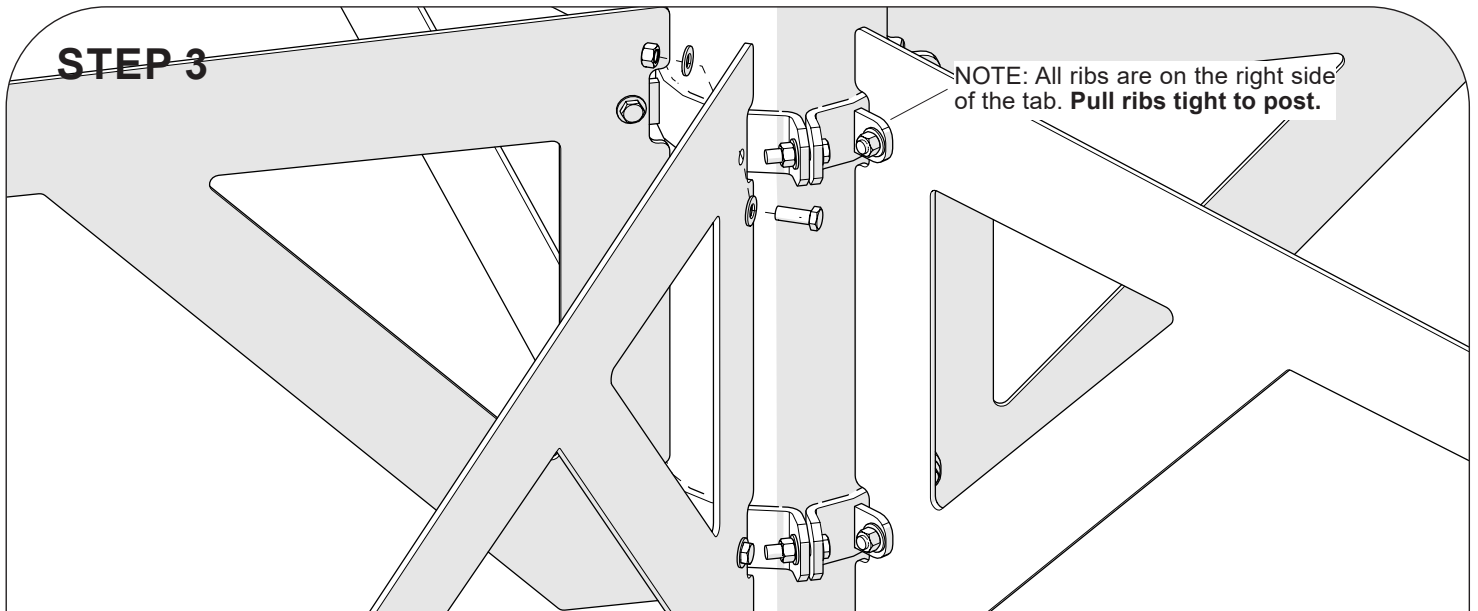
NOTE: Rivets will set clamp height and orientation.



- 4x  Rib Clamp (249292)
 2x  $\frac{1}{4}$ x $\frac{5}{8}$ " Drive Rivet (10610)
 4x  $\frac{3}{8}$ " Standard Hex Nut (100327)

- 4x  $\frac{3}{8}$ " x 1 $\frac{1}{2}$ " Hex Screw (100208)
 8x  $\frac{3}{8}$ " SAE Washer (100365)

STEP 3

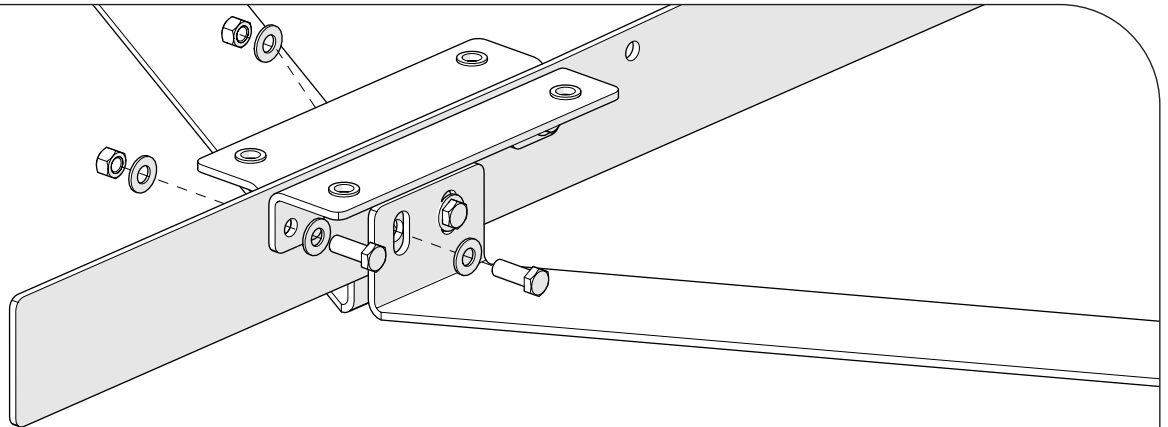


NOTE: All ribs are on the right side of the tab. Pull ribs tight to post.

- 6x  Rib (249295)
 12x  $\frac{3}{8}$ " Standard Hex Nut (100327)

- 12x  $\frac{3}{8}$ " x 1" Hex Screw (100206)
 24x  $\frac{3}{8}$ " SAE Washer (100365)

STEP 4



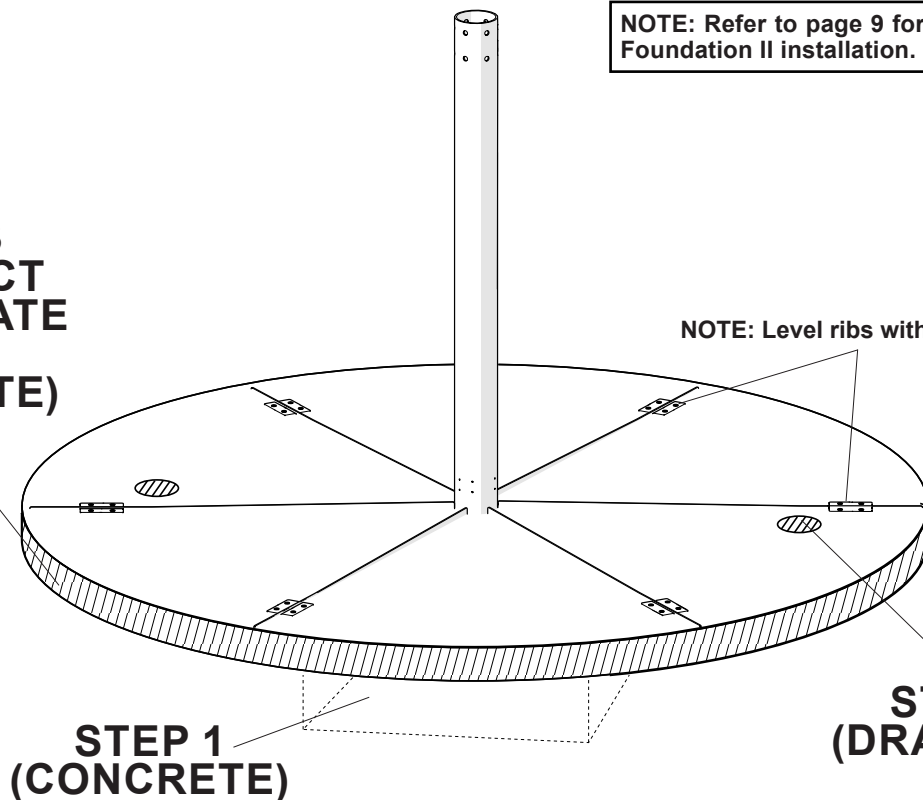
12x		Rib Bracket (249299)	24x		3/8" x 1" Hex Screw (100206)
24x		3/8" Standard Hex Nut (100327)	48x		3/8" SAE Washer (100365)
6x		Rib Footer (249297)			

FOUNDATION II

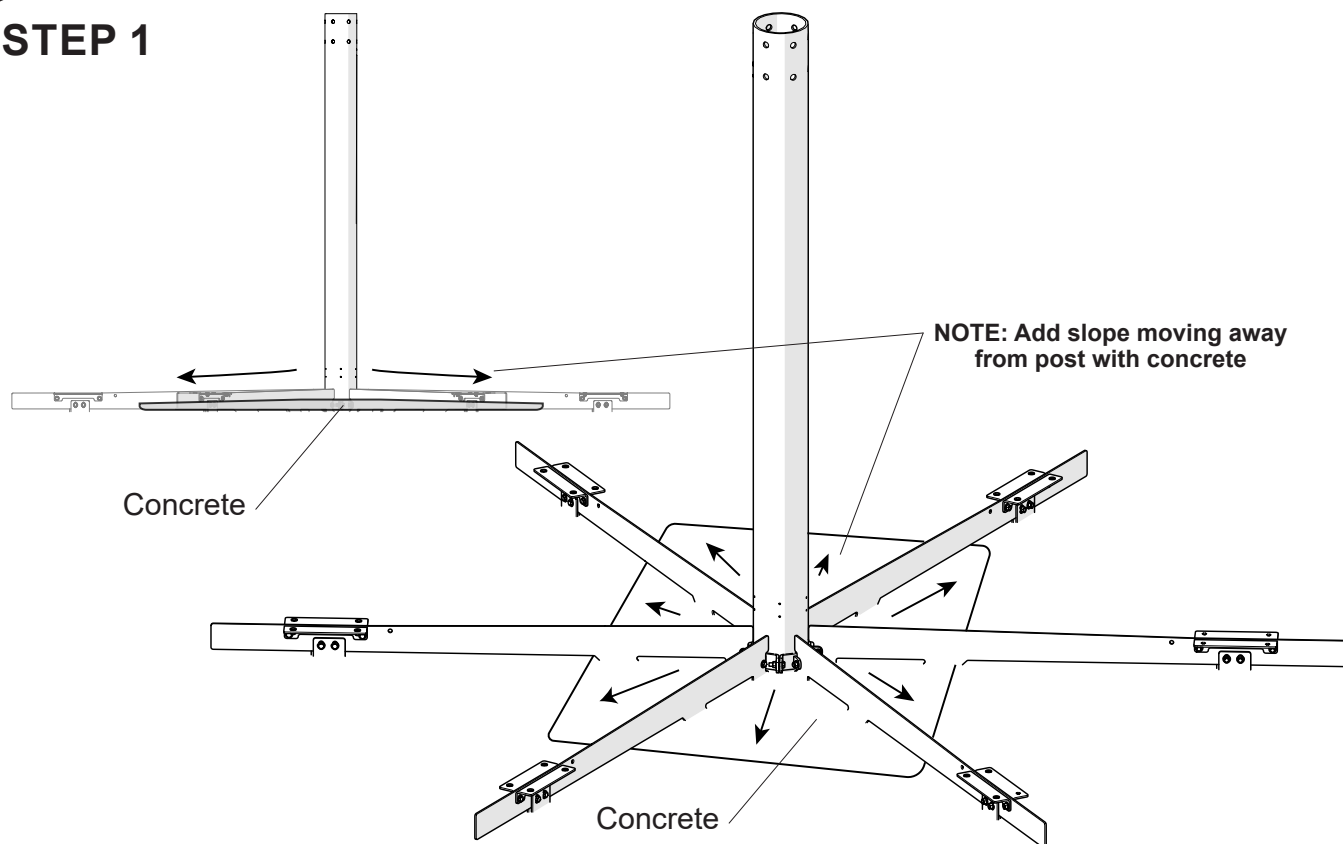
NOTE: Refer to page 9 for in-field photos of Foundation II installation.

**STEP 3
(COMPACT
AGGREGATE
OR
CONCRETE)**

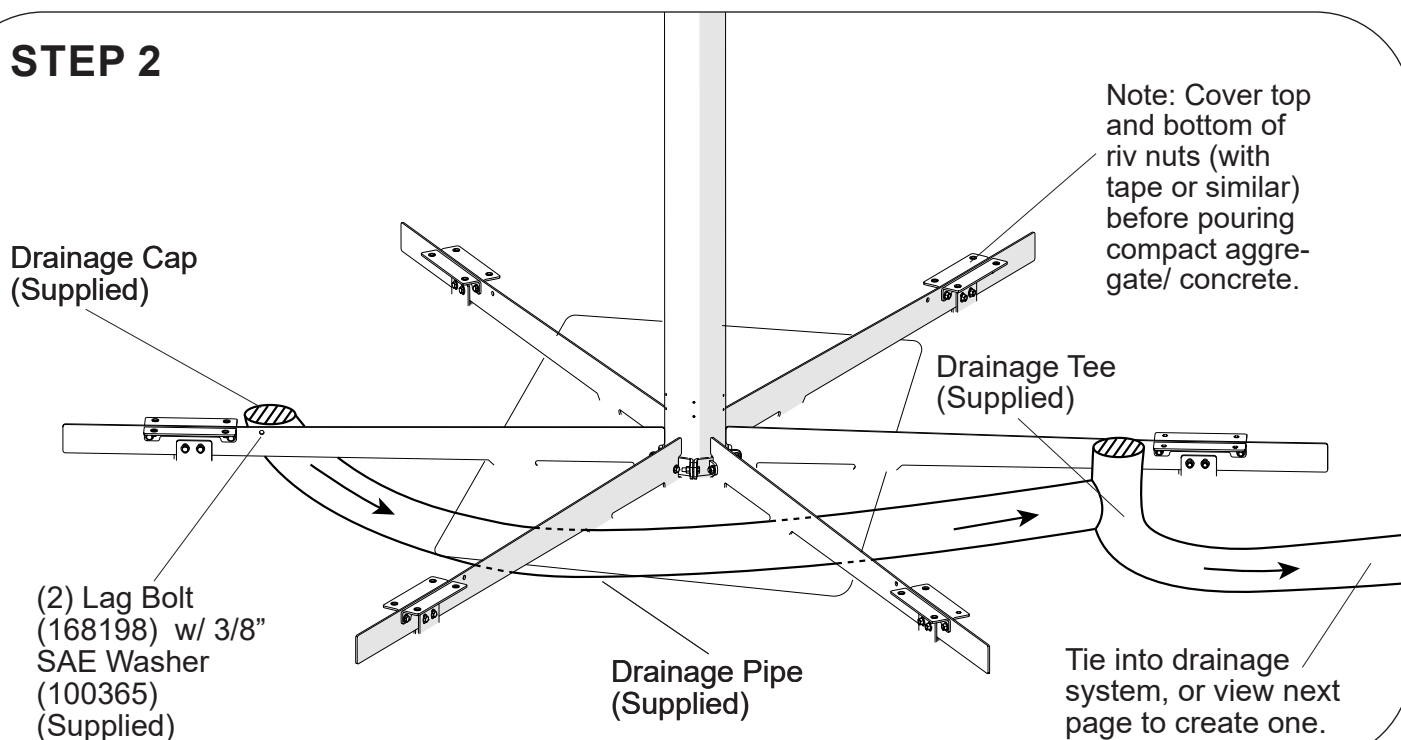
NOTE: Level ribs with aggregate/concrete



STEP 1

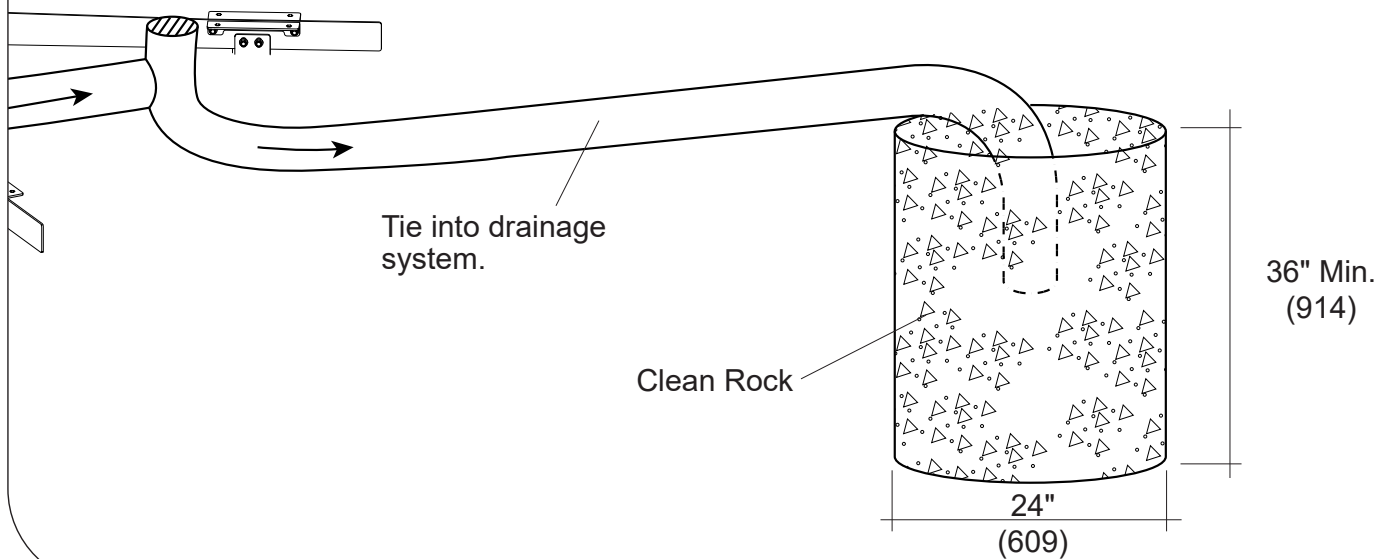


STEP 2



STEP 3

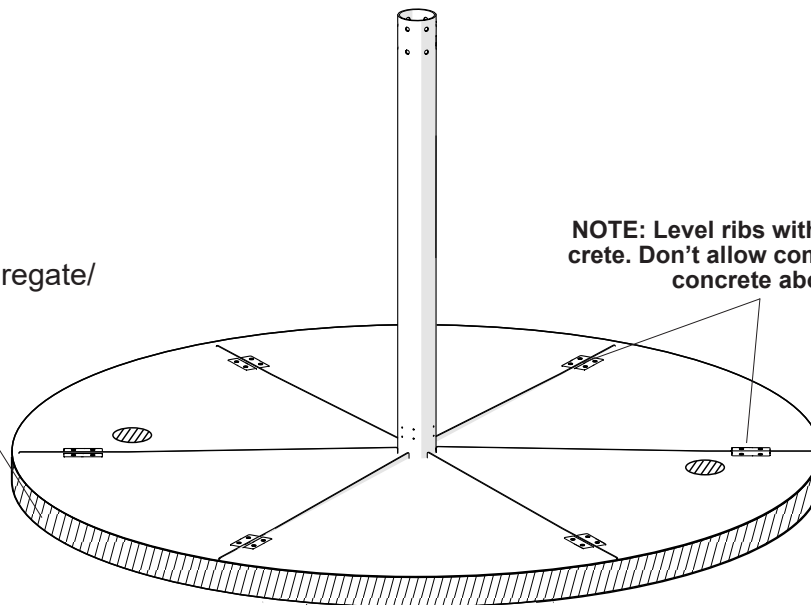
Note: For sites without an existing drainage system.



STEP 4

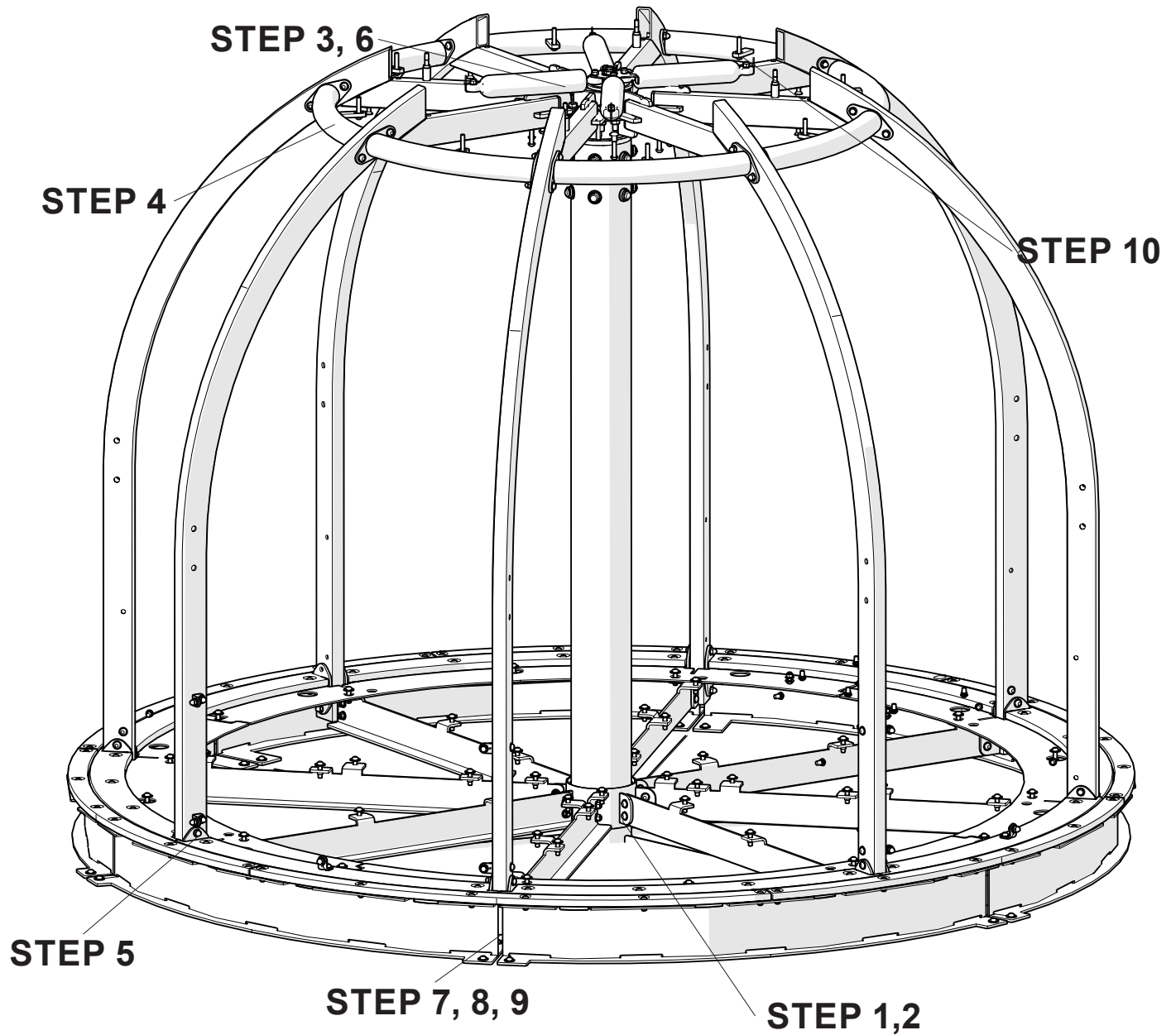
Compact Aggregate/
Concrete

NOTE: Level ribs with aggregate/ concrete. Don't allow compact aggregate/ concrete above ribs.

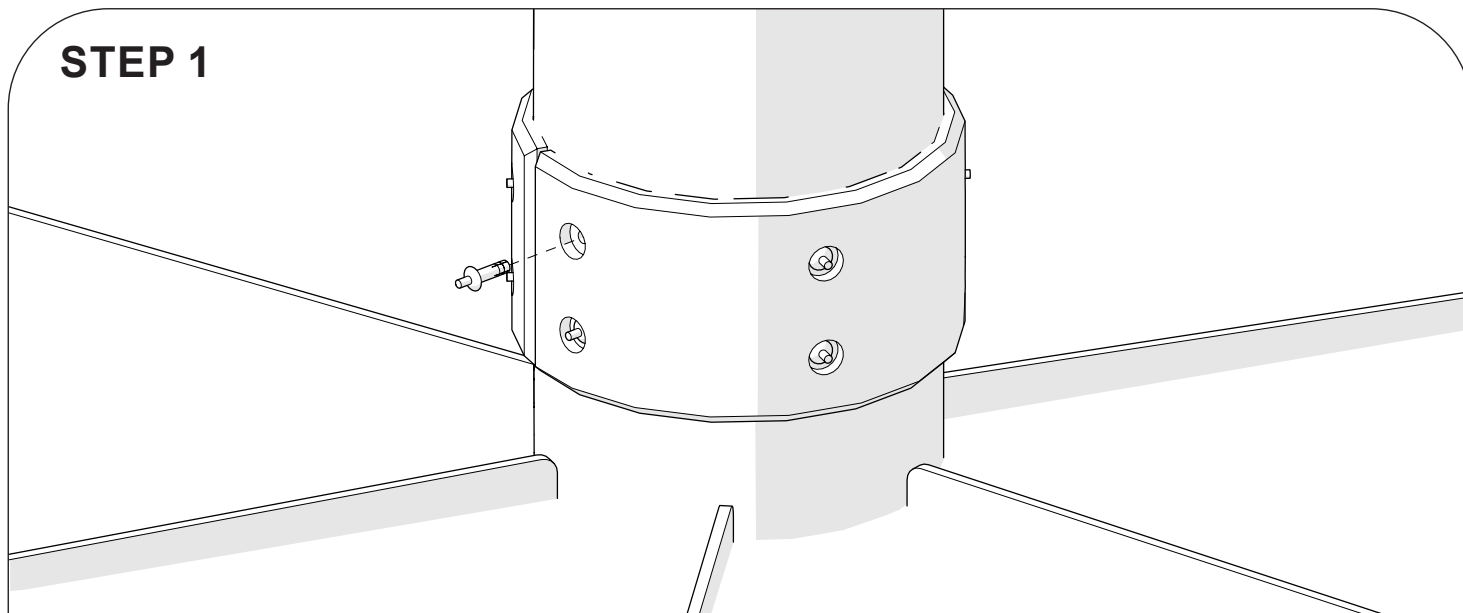




STRUCTURE



STEP 1



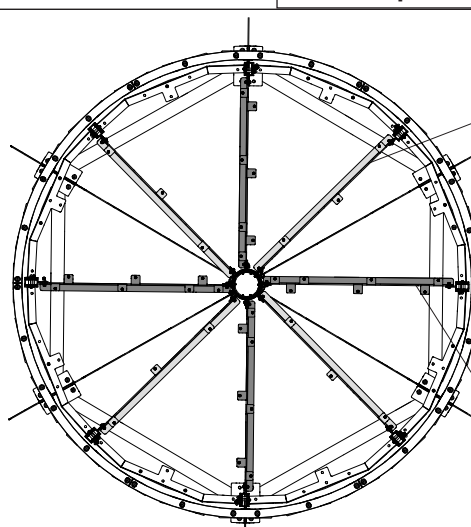
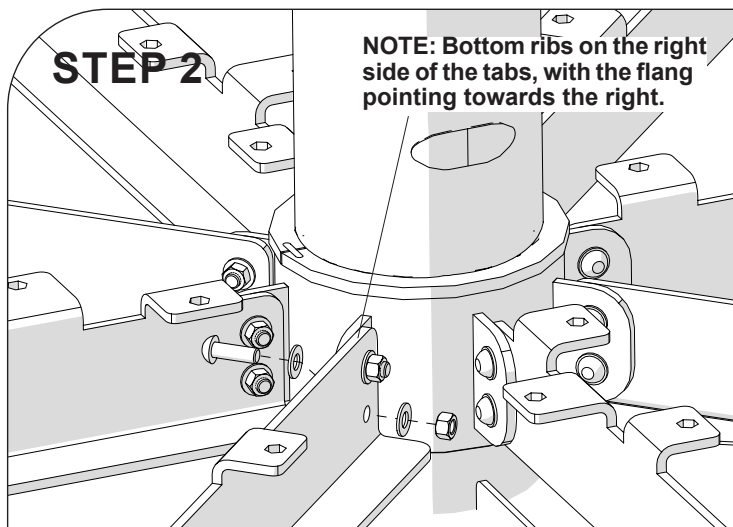
12x  $\frac{1}{4}$ " x $\frac{3}{8}$ " Drive Rivet (100611) 2x  Bushing Tube (292617)



<https://bit.ly/2T8GfGk>

STEP 2









NOTE: Bottom ribs on the right side of the tabs, with the flang pointing towards the right.



(4) 3 Tab Bottom Rib

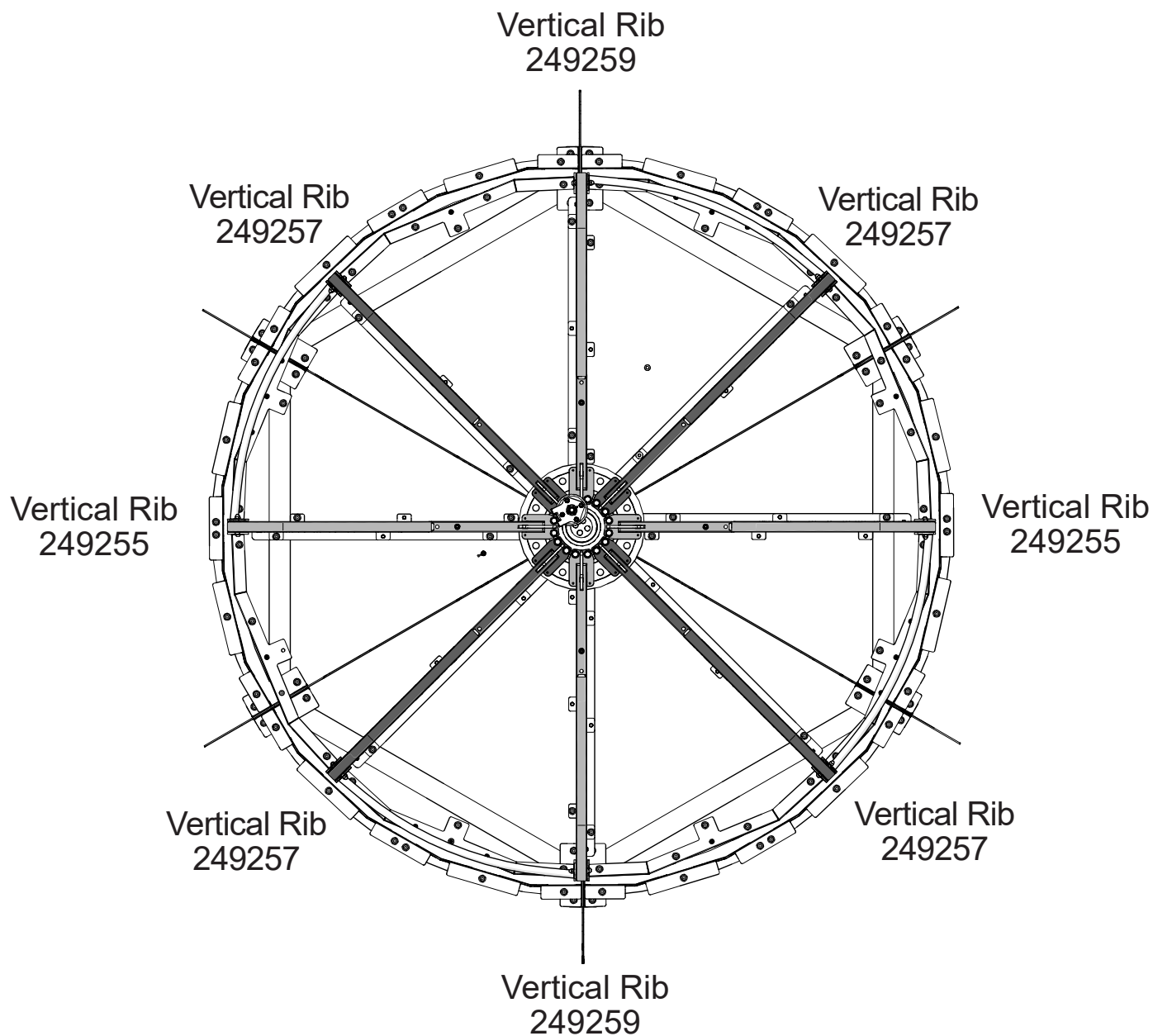
NOTE:
Alternate 3 and 7 tab bottom ribs as shown.

(4) 7 Tab Bottom Rib

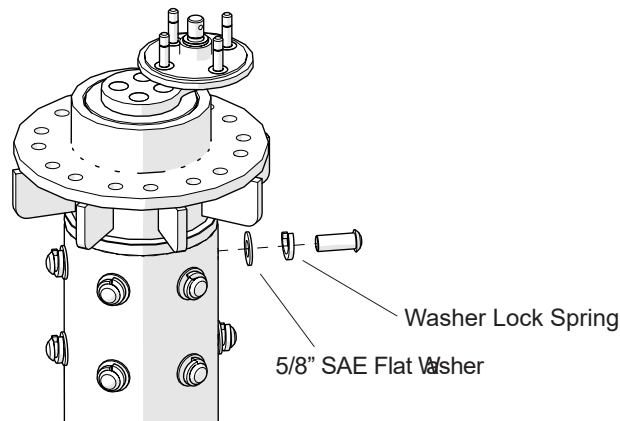
16x  $\frac{3}{8}$ " Standard Hex Nut (100327) 16x  $\frac{3}{8}$ x 1 $\frac{1}{8}$ " BHCS (100198)
4x  3 Tab Bottom Rib (249267) 32x  $\frac{3}{8}$ " SAE Washer (100365)
4x  7 Tab Bottom Rib (249266) 1x  Bottom Rib Mount (248520)
1x  Bushing Belt (254468) 1x  Cable Tie 5 - $\frac{3}{4}$ " (109680)

REFERENCE FOR STEP 4

NOTE: Orientation of the Vertical ribs and 3 Tab/ 7 Tab Bottom ribs are independent of each other.



STEP 3



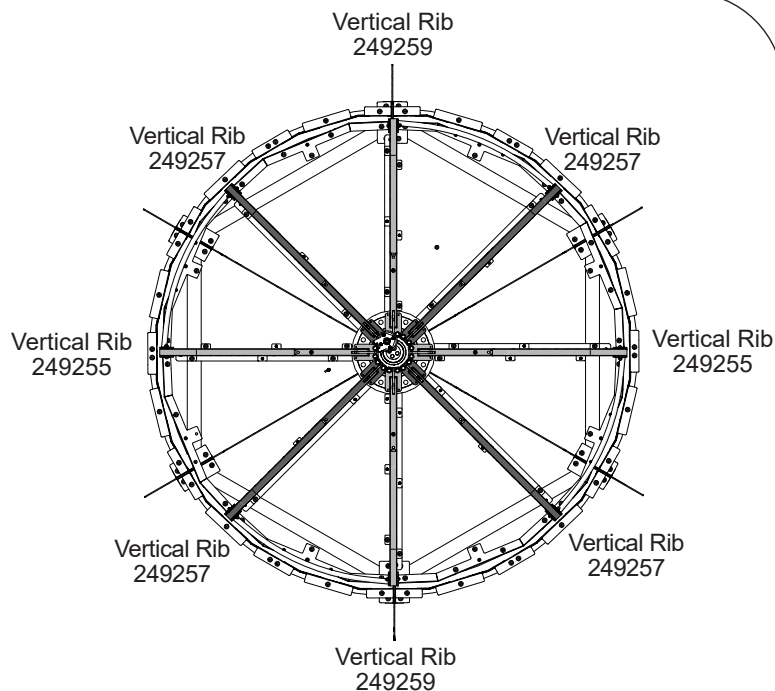
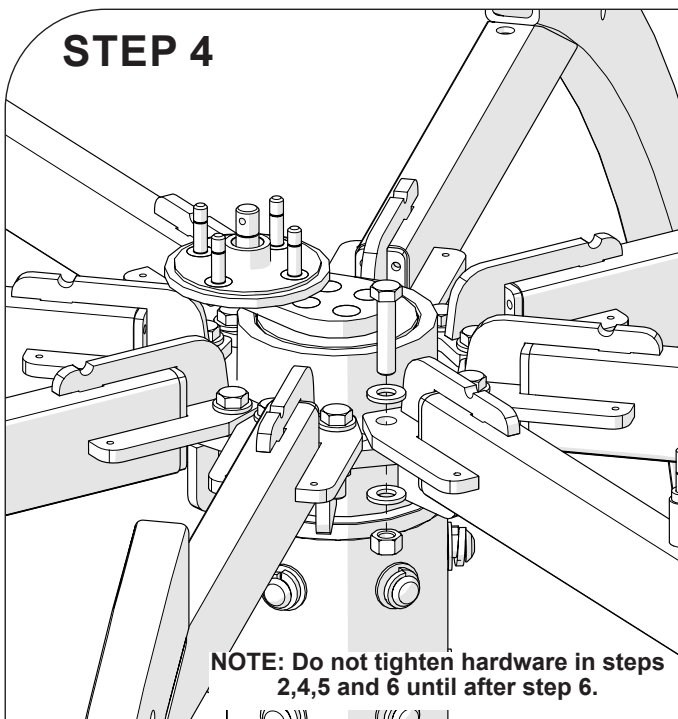
1x 1.25 Offset Bearing and Hub Assembly (254134)

12x 5/8" SAE Flat Washer (129500)

12x 5/8 x 1 1/2" BHCS (100201)

12x Washer Lock Spring (175652)

STEP 4



2x Vertical Rib w/Pin and 1 Insert (249259)

4x Vertical Rib w/o Pin and 1 Insert (249257)

2x Vertical Rib w/Pin and 4 Inserts (249255)

16x 1/2" Standard Hex Nut (129692)

16x 1/2" x 2 1/4" Hex Screw (131862)

32x 1/2" SAE Washer (113550)

STEP 5

NOTE: Refer to step 4 simultaneously to achieve proper placement.

NOTE: Tab is placed on the right of the bottom ribs.
Use level when tightening ribs.

Horizontal Bottom Support

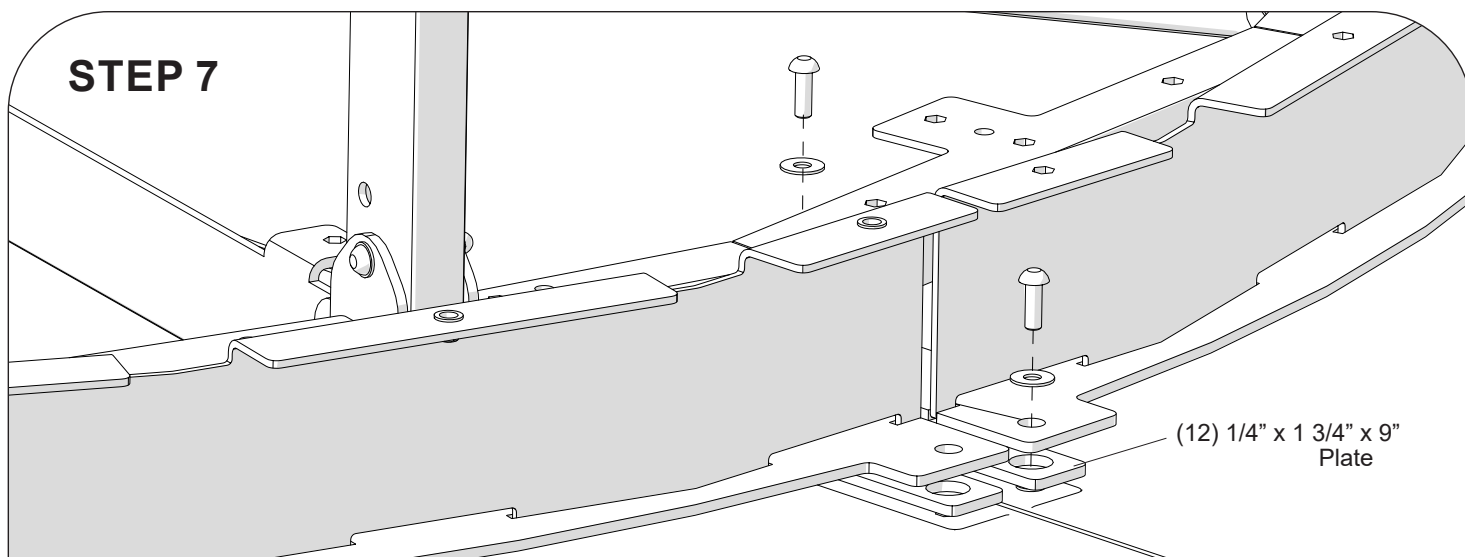
8x		Horizontal Bottom Support (249286)	16x		3/8" Standard Hex Nut (100327)
16x		3/8" Low Crown Hex Nut (100349)	64x		3/8" SAE Washer (100365)
16x		3/8 x 2 1/2" BHCS (100174)	16x		3/8 x 1 1/8" BHCS (100198)

STEP 6

Globe Pipe

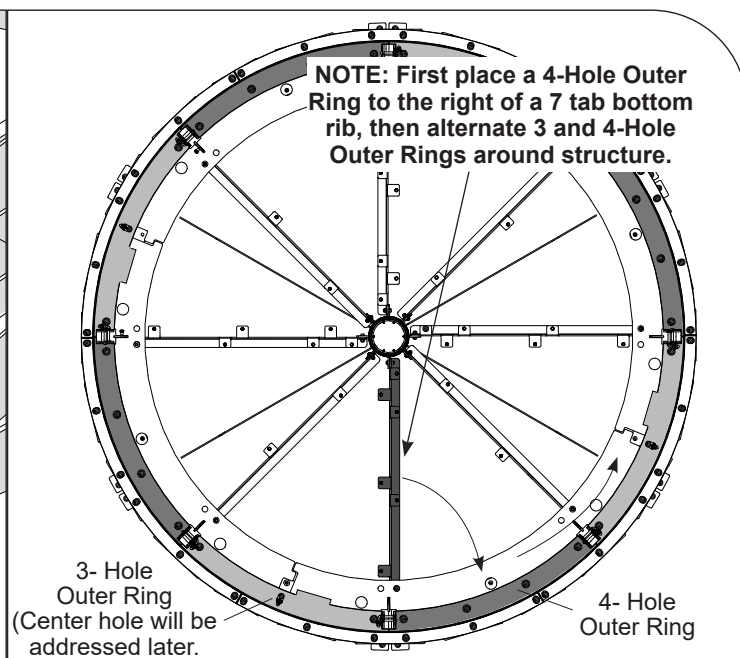
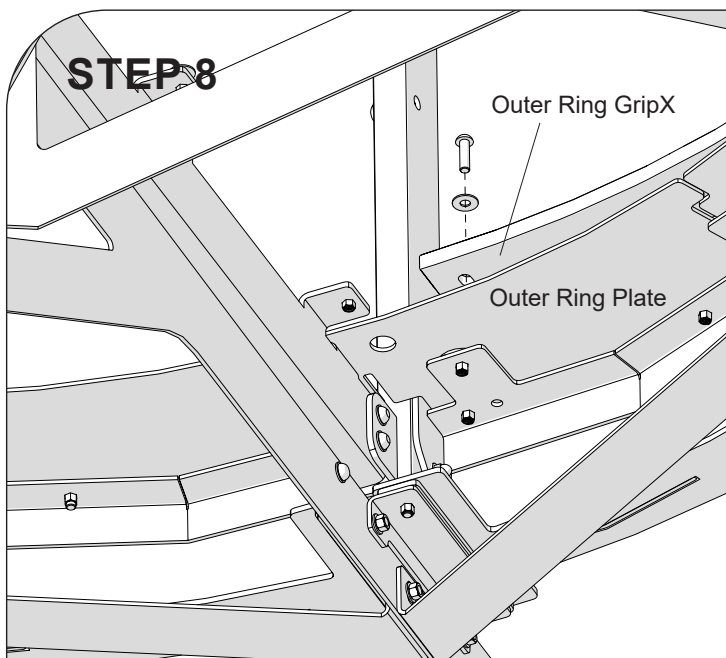
8x		Globe Pipe (212866)	16x		3/8 x 2 1/2" BHCS (100174)
16x		3/8" Low Crown Hex Nut (100349)	32x		3/8" SAE Washer (100365)

STEP 7



- | | | | | | |
|-----|--|--------------------|-----|--|--------------------------------------|
| 6x | | Skirt (249289) | 24x | | $\frac{3}{8}$ x 1 $\frac{1}{8}$ \"/> |
| 24x | | $\frac{3}{8}$ \"/> | | | |
| | | | 12x | | $\frac{1}{4}$ \"/> |

STEP 8



- | | | | | | |
|----|--|---|-----|--|--------------------------------------|
| 4x | | Black 3- Hole Outer Ring GripX (297891) | 24x | | $\frac{3}{8}$ x 1 $\frac{3}{8}$ \"/> |
| 4x | | Black 4 Hole Outer Ring GripX (246441) | 24x | | $\frac{3}{8}$ \"/> |
| 4x | | Outer Ring Plate (250371) | | | |



<https://bit.ly/2DTsWVh>

STEP 9

NOTE: While placing GripX into place ensure gap doesn't exceed 5/16" while spinning. Alternate Outer Skirt Grip X A (258597) and B (258598).

Grey Outer Skirt
Grip X B (258598)

Grey Outer Skirt
Grip X A(258597)

- | | | | | | |
|-----|--|--------------------------------------|-----|--|---|
| 6x | | Grey Outer Skirt Grip X B (258598) | 36x | | $\frac{3}{8}$ x 1 $\frac{1}{8}$ " BHCS (100198) |
| 6x | | Grey Outer Skirt Grip X A (258597) | | | |
| 36x | | $\frac{3}{8}$ " Flat Washer (100362) | | | |

STEP 10

(8) $\frac{3}{8}$ Nylock Hex Nut

Hub Clamp

- | | | | | | |
|----|--|---------------------------------------|----|--|--------------------|
| 4x | | 70 Series Shock (215884) | 1x | | Hub Clamp (222306) |
| 8x | | $\frac{3}{8}$ Nylock Hex Nut (136931) | | | |

INTERIOR I

STEP 4

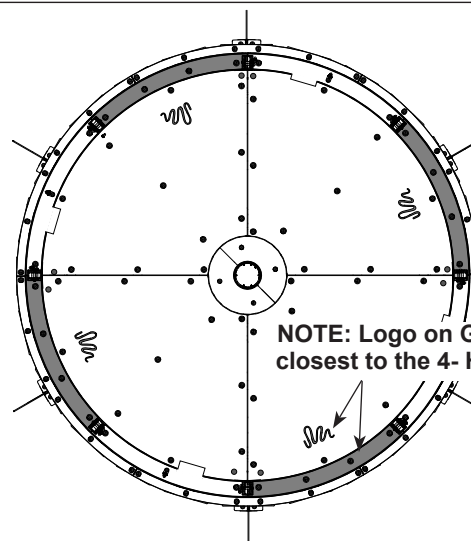
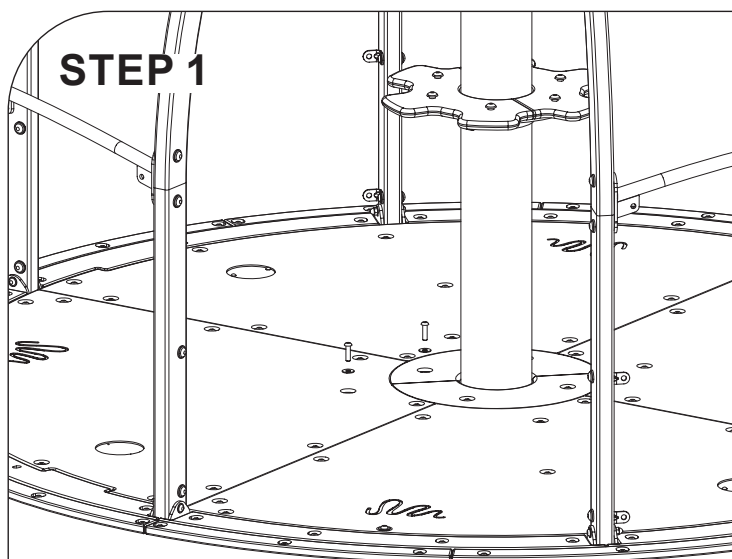
STEP 2

STEP 1

STEP 3

Top of Permalene

25 1/2"

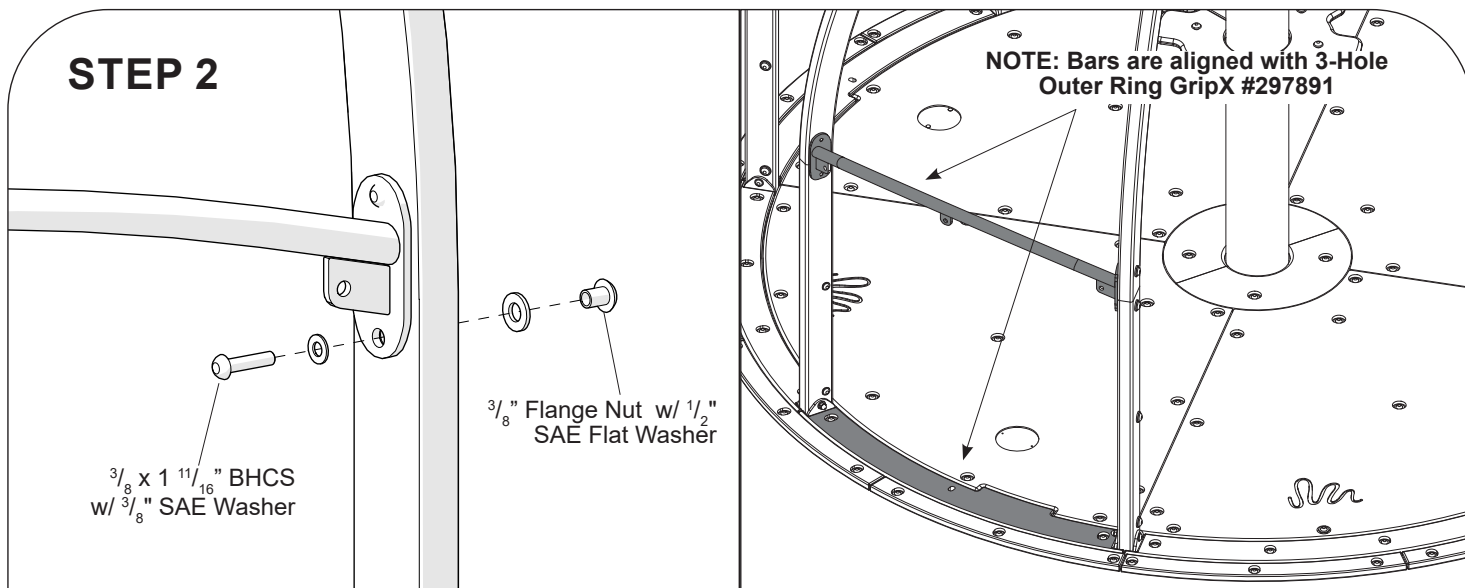


NOTE: Logo on GripX is oriented closest to the 4- Hole Outer Ring.

56x  3/8 x 1 3/8" BHCS (113027)
56x  3/8" Flat Washer (100362)

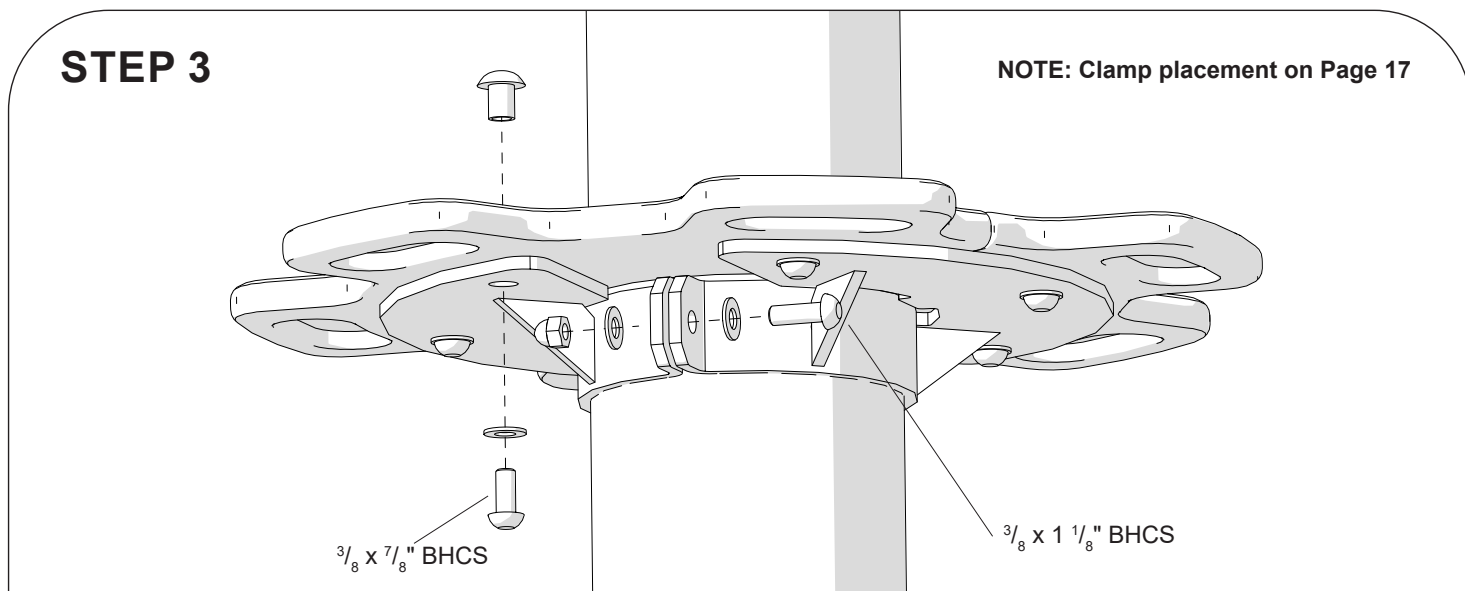
4x  Black Outer Deck GripX (297889)
2x  Black Center Deck GripX (246435)

STEP 2



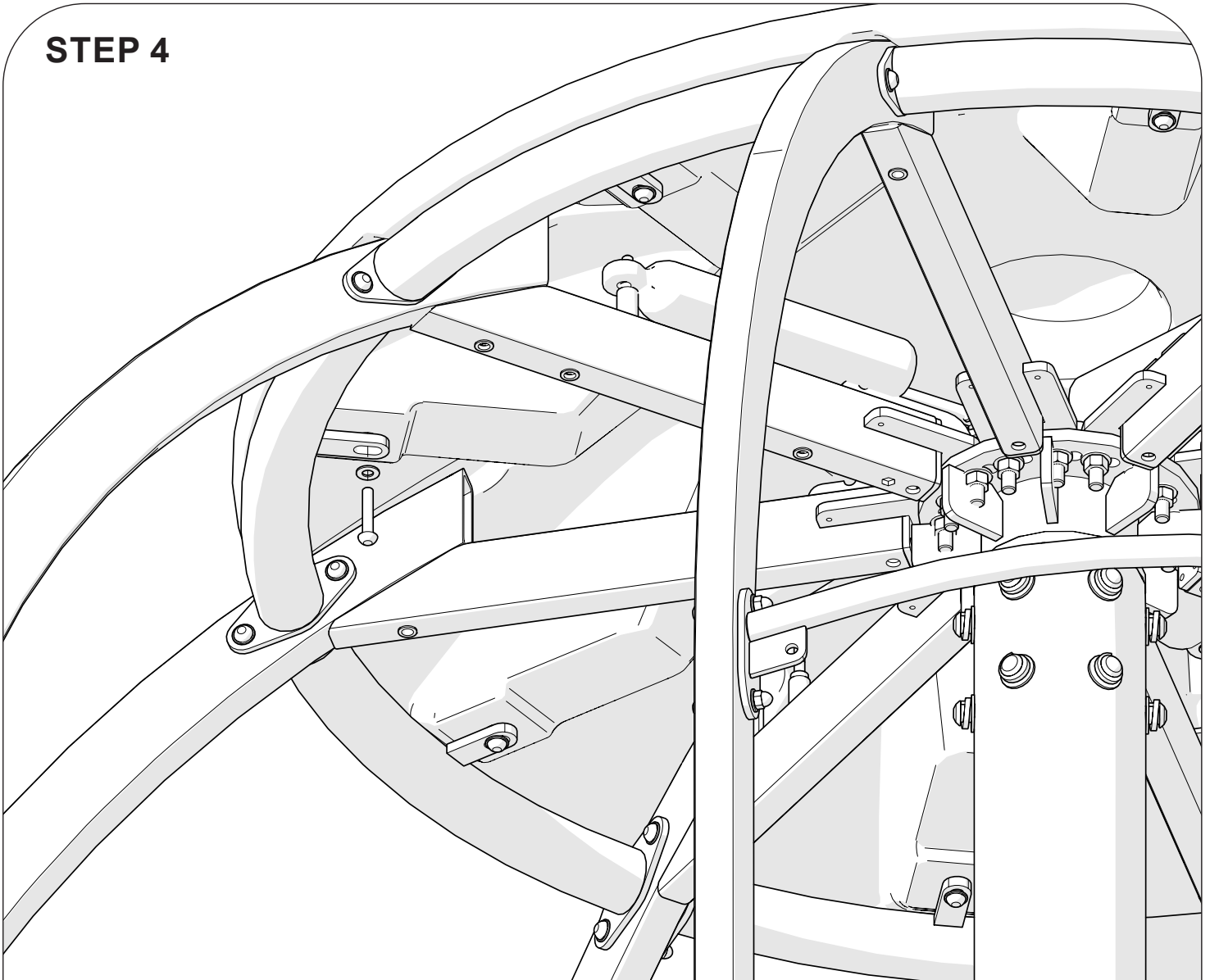
4x		Arch Support (249265)	16x		3/8" SAE Washer (100365)
16x		3/8 x 1 11/16" BHCS (123224)	16x		3/8" Flange Nut (100353)
16x		1/2" SAE Flat Washer (113550)			


STEP 3



2x		Center Post Ring Weldment (249268)	10x		3/8" SAE Washer (100365)
2x		Center Ring Permalene (246424)	2x		3/8" Low Crown Hex Nut (100349)
2x		3/8 x 1 1/8" BHCS (100198)	6x		3/8" Flange Nut (100353)
6x		3/8 x 7/8" BHCS (100196)			

STEP 4



8x 

$\frac{3}{8}$ x 2" BHCS
(100173)

8x 

$\frac{3}{8}$ " SAE Washer
(100365)

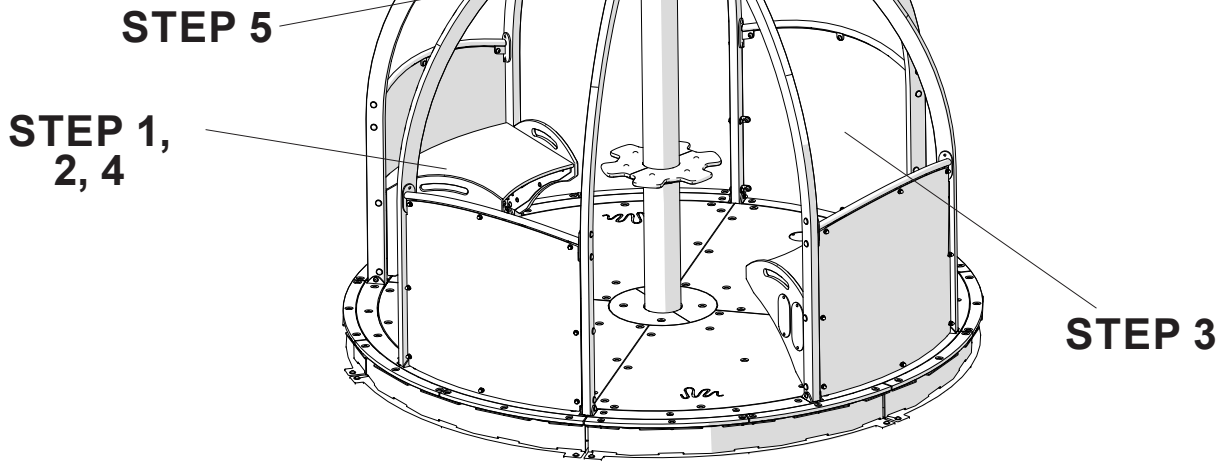
1x 

Spinner Top
(215474)

INTERIOR II

NOTE: Refer to panel orientation below to place panels in proper order.

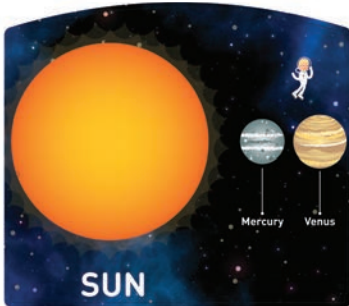
NOTE: Document shows quantities for 2 seat configuration. When assembling a 3 seat configuration refer to quantities in the bill of materials.



250426



250430

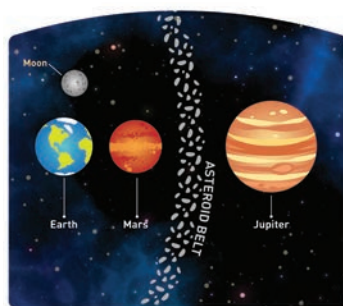


250435

250427



250431

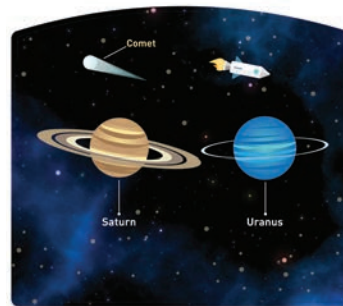


250434

250428



250432

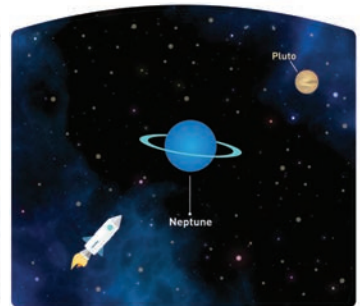


250436

250429



250433



250437



250438



250439



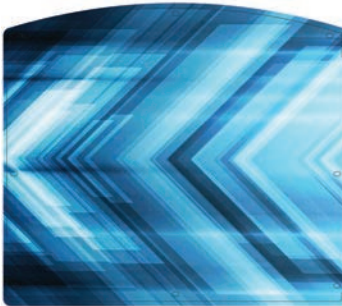
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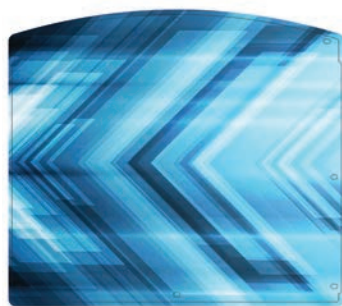
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250446



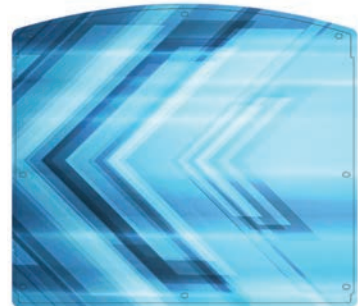
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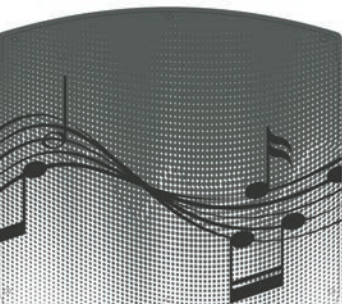
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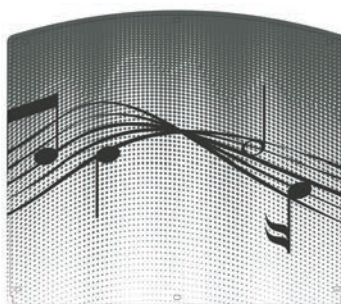
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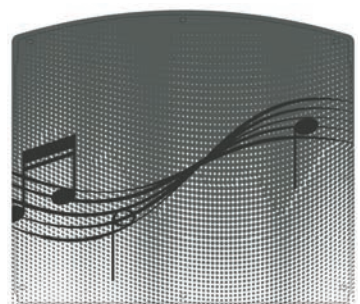
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250444



250445



251276



251277

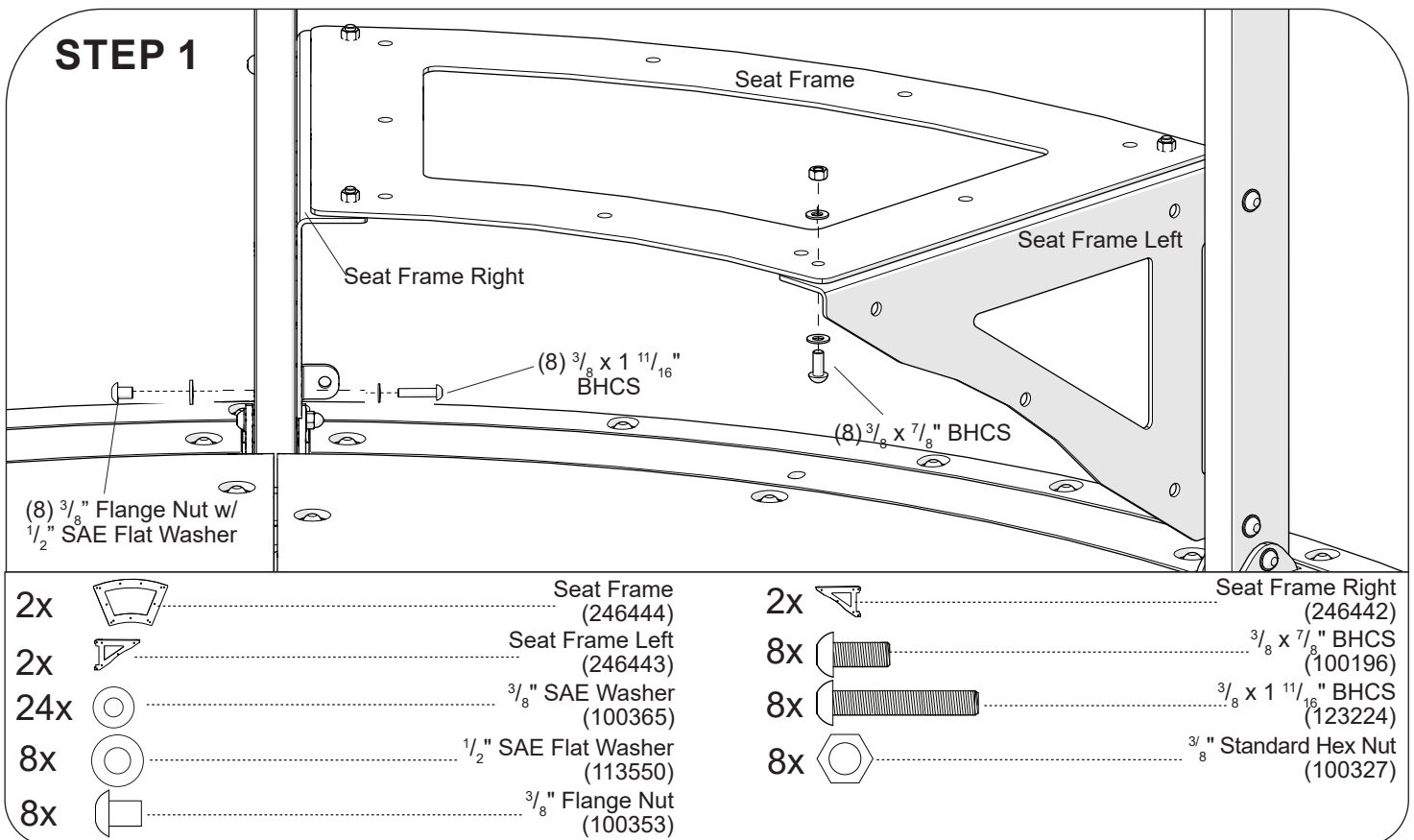
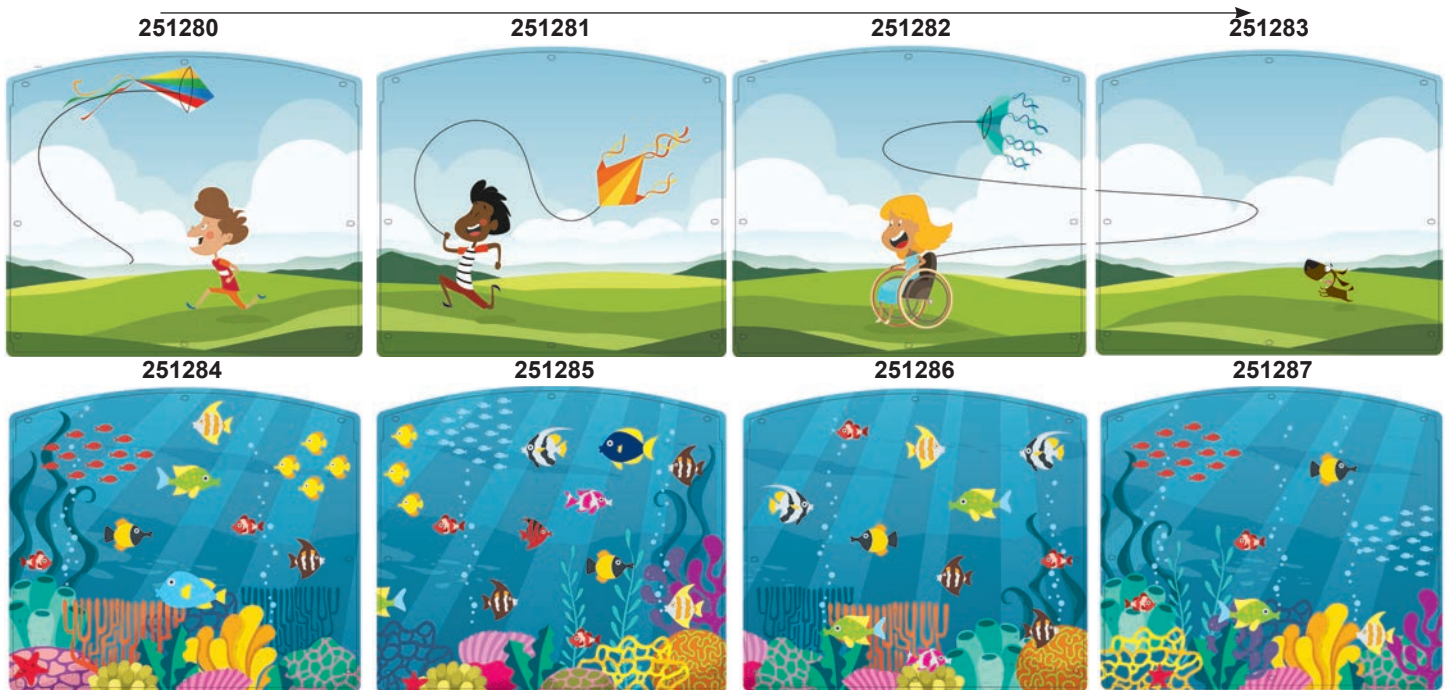


251278



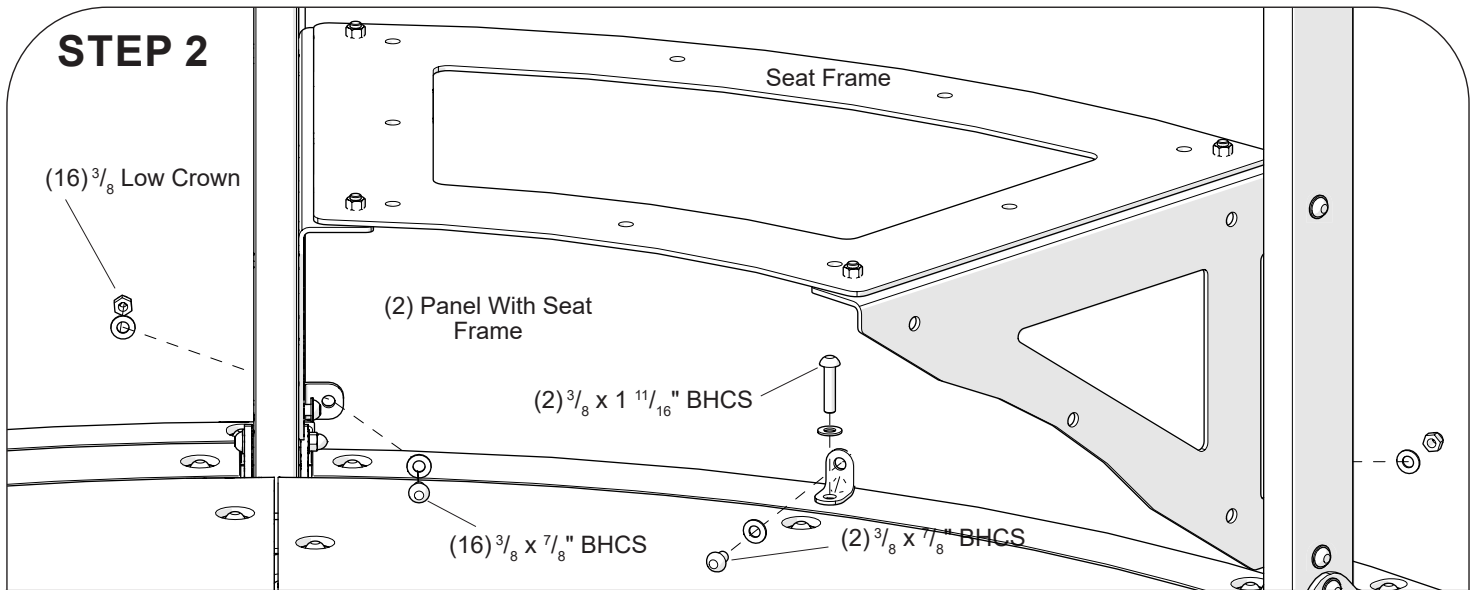
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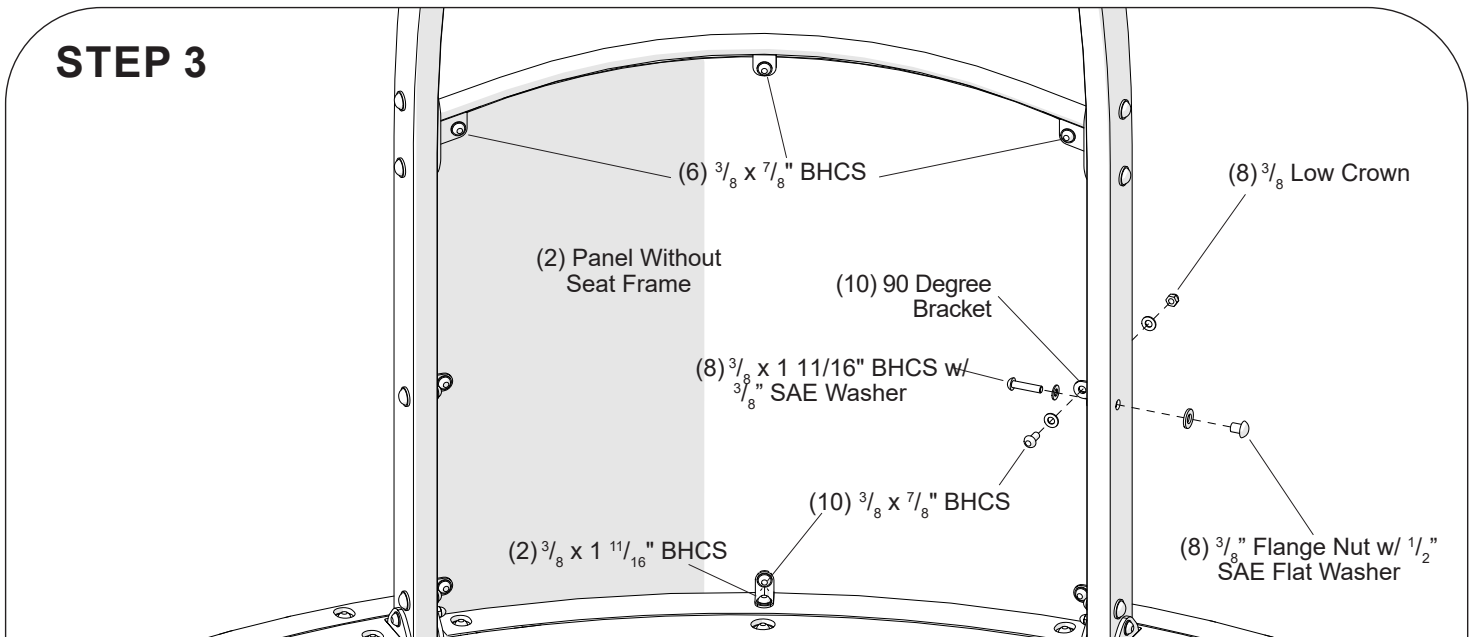
NOTE: Document shows quantities for 2 seat configuration. When assembling a 3 seat configuration refer to quantities in the bill of materials.

STEP 2



16x		3/8" Low Crown Hex Nut (100349)	34x		3/8" SAE Washer (100365)
16x		3/8 x 7/8" BHCS (100196)	2x		90 Degree Bracket (147807)
2x		3/8 x 1 11/16" BHCS (123224)	2x		Perf Panel (246428)

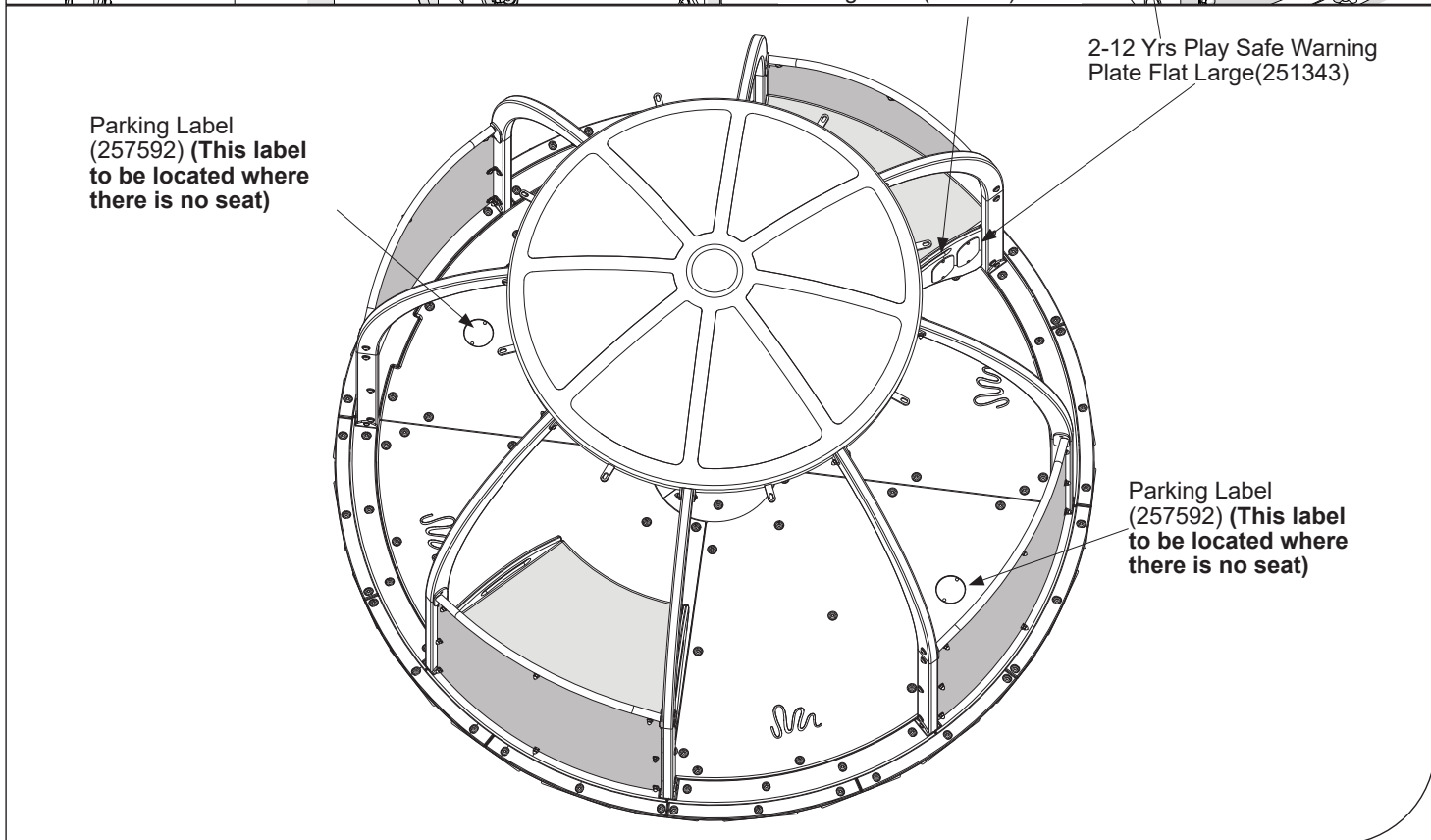
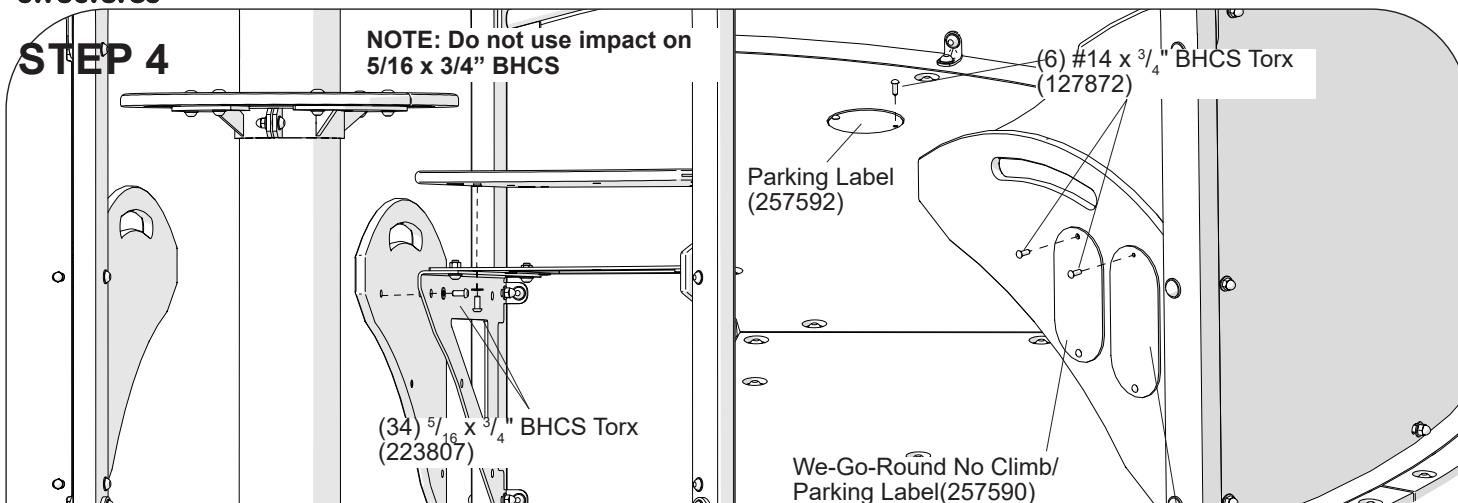
STEP 3



2x		Perf Panel (246428)	10x		90 Degree Bracket (147807)
16x		3/8" Low Crown Hex Nut (100349)	42x		3/8" SAE Washer (100365)
10x		3/8 x 1 11/16" BHCS (123224)	8x		3/8" Flange Nut (100353)
16x		3/8 x 7/8" BHCS (100196)	8x		1/2" SAE Flat Washer (113550)

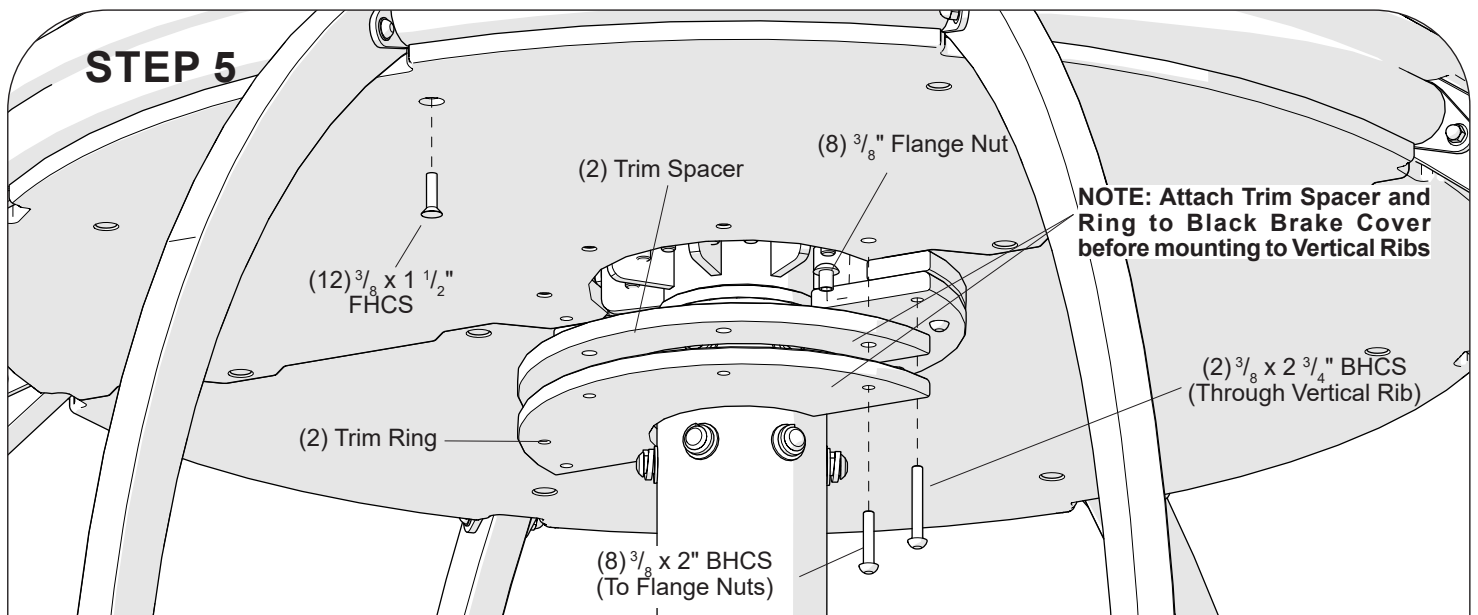
STEP 4

**NOTE: Do not use impact on
5/16 x 3/4" BHCS**



2x		Seat Top (246425)	2x		Seat Panel Right (246427)
2x		Seat Panel Left (246426)	34x		5/16 x 3/4 inch BHCS Torx (223807)
34x		5/16 inch SAE Flat Washer (223956)	6x		#14 x 3/4 inch BHCS Torx (127872)
1x		Parking Label (257592)	1x		2-12 Yrs Play Safe Warning Plate Flat Large (251343)
1x		Warning No Climb/Parking Label (257590)			

STEP 5



2x		Black Brake Cover (215887)	2x		Trim Ring (218445)
2x		Black Trim Spacer (218444)	8x		$\frac{3}{8}$ x 2" BHCS (100173)
2x		$\frac{3}{8}$ x 2 $\frac{3}{4}$ " BHCS (100175)	12x		$\frac{3}{8}$ x 1 $\frac{1}{2}$ " FHCS (151421)
8x		$\frac{3}{8}$ " Flange Nut (100353)			



Parts List - 2 Seat Option

Part#	Description	Qty.
147807	Angle Brkt Pnt, Specify Color	12
292617	Bushing Uhmw 6" Tube	2
212866	Globe Pipe Bottom W/Out Net, Specify Color	8
215474	Globe Spinner Top Roto, Specify Color	1
215887	Globe Brake Cover, Black in Color	2
254134	1.25 Offse Bearing + Hub Asm	1
218444	Trim Spacer Globe, Black in Color	2
218445	Trim Ring Globe, Black in Color	2
222306	Global Motion® Hub Clamp Sst	1
222399	#3 Rebar X 18"	2
246424	Ctr Ring Perm, Specify Color	2
246425	Seat Pnl Top, Specify Color	2
246426	Seat Pnl Lh, Specify Color	2
246427	Seat Pnl Rh, Specify Color	2
297889	Main Deck Gripx, Black in Color	4
246435	Ctr Deck Gripx, Black in Color	2
246441	Otr Ring Perm 4 Hole, Black in Color	4
246442	Seat Frm Rh Pnt, Specify Color	2
246443	Seat Frm Lh Pnt, Specify Color	2
246444	Seat Frm Plt Pnt, Specify Color	2
297891	Otr Ring Perm With Tab Slot, Black in Color	4
258597	Otr Skirt Gripx A, Gray in color	6
258598	Otr Skirt Gripx B, Gray in color	6
248520	Btm Rib Mnt Machined	1
249255	Vert Rib With Mtg Pin 4 Inserts Pnt, Specify Color	2
249257	Vert Rib Wout Mtg Pin Pnt, Specify Color	4
249259	Vert Rib With Mtg Pin 1 Insert Pnt, Specify Color	2
249265	Arch Pnl Sprt Weldt Pnt, Specify Color	4
249266	7 Flg Btm Rib Pnt, Specify Color	4
249267	3 Flg Btm Rib Pnt, Specify Color	4
249268	Ctr Post Ring Weldt Pnt, Specify Color	2
289361	6.0 OD x .25 x 119.5" Zp Post Pnt, Specify Color	1
249286	Horiz Btm Sprt Weldt Pnt, Specify Color	8
249289	Otr Skirt Weldt Pnt, Specify Color	6
249292	Rib Clmp, Install Weldt Pnt, Specify Color	4
249295	Rib, Install Pnt, Specify Color	6
249297	Rib Ftr, Install Pnt, Specify Color	6
249299	Rib Brkt, Install Pnt, Specify Color	12
250371	Otr Ring Plt Pnt, Specify Color	4
250643	4" X 300" Perf Drain Pipe	1
250644	4" Flexible Drain Tee	1
250645	4" Drain Cap	2
251007	4" Drain Coupler	2
215884	70 Series Shock	4
*	DigiFuse Panels (Refer to Interior II, Pg. 17)	4
253792	9" Plate Pnt, Specify Color	12
XXXXXX	Custom Artwork Panel	*
254468	Bushing Belt , Black	1

250568	Hdw Pkg We-Go-Round Rib Plates Asm	1
100206	Hex Cap 3/8X1i Sst Pat	36
100208	Hex Cap 3/8X1-1/2 Sst Pat	4
100327	Nut Hex Std 3/8-16 Sst	40
100365	Washer Flat Sae 3/8I Sst	82
100610	Rivet 1/4X5/8I Drv As	2
168198	Lag Scr Bh 6Lp 3/8X1-1/2I	2

253850	Hdw Pkg We-Go-Round Skirt Asm	1
100198	Bhcs 6Lp 3/8X1-1/8I Sst	60
100362	Washer Flat 3/8I Sst	60

289338	Hdw Pkg We-Go-Round Hub/Bushings	1
100201	Bhcs 6Lp 5/8X1-1/2I Sst	12
100611	Rivet 1/4X3/8I Drv As	12
109680	Cable Tie 5-3/4I Black	1
129500	Washer Flat Sae 5/8I Sst	12
136931	Nut Hex Nylok 3/8-16 Sst	8
175652	Washer Lock Spring 5/8I Sst	12

250580	Hdw Pkg We-Go-Round Frame Asm	1
100174	Bhcs 6Lp 3/8X2-1/2I Sstpat	32
100198	Bhcs 6Lp 3/8X1-1/8I Sst	32
100327	Nut Hex Std 3/8-16 Sst	32
100349	Nut L/C Cap 3/8-16 Sst	32
100365	Washer Flat Sae 3/8I Sst	128
113550	Washer Flat Sae 1/2I Sst	32
129692	Nut Hex Std 1/2-13 Sstpat	16
131862	Hex Cap 1/2X2-1/4 Sst	16

250586	Hdw Pkg We-Go-Round Brake Cover	1
100173	Bhcs 6Lp 3/8X2i Sst Pat	16
100175	Bhcs 6Lp 3/8X2-3/4I Sst	2
100353	Flg Nut 6Lp 3/8-16 Sst	8
100365	Washer Flat Sae 3/8I Sst	8
151421	Fhcs 6Lp 3/8X1-1/2I Sst W/Patch	12

250587	Hdw Pkg We-Go-Round Perf Panel W/O Seat	2
100196	Bhcs 6Lp 3/8X7/8I Sst	8
100349	Nut L/C Cap 3/8-16 Sst	8
100353	Flg Nut 6Lp 3/8-16 Sst	8
100365	Washer Flat Sae 3/8I Sst	25
113550	Washer Flat Sae 1/2I Sst	8
123224	Bhcs 6Lp 3/8X1-11/16I Sst	9

293793	Hdw Pkg We-Go-Round Perf Panel W/Seat	2
100196	Bhcs 6Lp 3/8X7/8I Sst	12
100327	Nut Hex Std 3/8-16 Sst	4
100349	Nut L/C Cap 3/8-16 Sst	8
100353	Flg Nut 6Lp 3/8-16 Sst	8
100365	Washer Flat Sae 3/8I Sst	33
113550	Washer Flat Sae 1/2I Sst	8
123224	Bhcs 6Lp 3/8X1-11/16I Sst	9
223807	Bhcs 6Lp 5/16I -18 X 3/4I Sst	17
223956	Washer Flat Sae 5/16I Sst	17

258581	Hdw Pkg We-Go-Round Decking	1
100362	Washer Flat 3/8I Sst	80
113027	Bhcs 6Lp 3/8X1-3/8I Sst	80

250590	Hdw Pkg We-Go-Round Center Ring	1
100196	Bhcs 6Lp 3/8X7/8I Sst	6
100198	Bhcs 6Lp 3/8X1-1/8I Sst	2
100349	Nut L/C Cap 3/8-16 Sst	2
100353	Flg Nut 6Lp 3/8-16 Sst	6
100365	Washer Flat Sae 3/8I Sst	10

258556	Hdw Pkg We-Go-Round Labels	1
127463	Bit Hex Tpp T27 (Torx)	1
127872	Bhcs Torx #14 X 3/4 Sst Thread Type Ab	8
251343	2-12 Yrs Play Safe Warning Plate Flat Large	1
257590	No Climb/Parking Plate	1
257592	Parking Plate	2

DB = Direct Bury



Kids In Motion

249558 We-Go-Round™ w/DigiFuse

Parts List - 3 Seat Option

Part#	Description		
Part#	Description		
Qty.			
147807	Angle Brkt Pnt, Specify Color	8	
292617	Bushing Uhmw 6" Tube	2	
212866	Globe Pipe Bottom W/Out Net, Specify Color	8	
215474	Globe Spinner Top Roto, Specify Color	1	
215887	Globe Brake Cover, Black in Color	2	
254134	1.25 Offse Bearing + Hub Asm	1	
218444	Trim Spacer Globe, Black in Color	2	
218445	Trim Ring Globe, Black in Color	2	
222306	Global Motion® Hub Clamp Sst	1	
222399	#3 Rebar X 18"	2	
246424	Ctr Ring Perm, Specify Color	2	
246425	Seat Pnl Top, Specify Color	3	
246426	Seat Pnl Lh, Specify Color	3	
246427	Seat Pnl Rh, Specify Color	3	
297889	Main Deck Gripx, Black in Color	4	
246435	Ctr Deck Gripx, Black in Color	2	
246441	Otr Ring Perm 4 Hole, Black in Color	4	
246442	Seat Frm Rh Pnt, Specify Color	3	
246443	Seat Frm Lh Pnt, Specify Color	3	
246444	Seat Frm Plt Pnt, Specify Color	3	
297891	Otr Ring Perm With Tab Slot, Black in Color	4	
258597	Otr Skirt GripX A, Gray in color	6	
258598	Otr Skirt GripX B, Gray in color	6	
248520	Btm Rib Mnt Machined	1	
249255	Vert Rib With Mtg Pin 4 Inserts Pnt, Specify Color	2	
249257	Vert Rib Wout Mtg Pin Pnt, Specify Color	4	
249259	Vert Rib With Mtg Pin 1 Insert Pnt, Specify Color	2	
249265	Arch Pnl Sprt Weldt Pnt, Specify Color	4	
249266	7 Flg Btm Rib Pnt, Specify Color	4	
249267	3 Flg Btm Rib Pnt, Specify Color	4	
249268	Ctr Post Ring Weldt Pnt, Specify Color	2	
289361	6.0 OD x .25 x 119.5" ZP Post Pnt, Specify Color	1	
249286	Horiz Btm Sprt Weldt Pnt, Specify Color	8	
249289	Otr Skirt Weldt Pnt, Specify Color	6	
249292	Rib Clmp, Install Weldt Pnt, Specify Color	4	
249295	Rib, Install Pnt, Specify Color	6	
249297	Rib Ftr, Install Pnt, Specify Color	6	
249299	Rib Brkt, Install Pnt, Specify Color	12	
250371	Otr Ring Plt Pnt, Specify Color	4	
215884	70 Series Shock	4	
250643	4" x 300" Perf Drain Pipe	1	
250644	4" Flexible Drain Tee	1	
250645	4" Drain Cap	2	
251007	4" Drain Coupler	2	
*	DigiFuse Panels (Refer to Interior II, Pg. 17)	4	
253792	9" Plate Pnt, Specify Color	12	
XXXXXX	Custom Artwork Panel	*	
254468	Bushing Belt, Black	1	
250568	Hdw Pkg We-Go-Round Rib Plates Asm	1	
100206	Hex Cap 3/8X1i Sst Pat	36	
100208	Hex Cap 3/8X1-1/2 Sst Pat	4	
100327	Nut Hex Std 3/8-16 Sst	40	
100365	Washer Flat Sae 3/8I Sst	82	
100610	Rivet 1/4X5/8I Drv As	2	
168198	Lag Scr Bh 6Lp 3/8X1-1/2I	2	
253850	Hdw Pkg We-Go-Round Skirt Asm	1	
100198	Bhcs 6Lp 3/8X1-1/8I Sst	60	
100362	Washer Flat 3/8I Sst	60	
289338	Hdw Pkg We-Go-Round Hub/Bushings	1	
100201	Bhcs 6Lp 5/8X1-1/2I Sst	12	
100611	Rivet 1/4X3/8I Drv As	12	
109680	Cable Tie 5-3/4I Black	1	
129500	Washer Flat Sae 5/8I Sst	12	
136931	Nut Hex Nylok 3/8-16 Sst	8	
175652	Washer Lock Spring 5/8I Sst	12	
250580	Hdw Pkg We-Go-Round Frame Asm	1	
100174	Bhcs 6Lp 3/8X2-1/2Isstpat	32	
100198	Bhcs 6Lp 3/8X1-1/8I Sst	32	
100327	Nut Hex Std 3/8-16 Sst	32	
100349	Nut L/C Cap 3/8-16 Sst	32	
100365	Washer Flat Sae 3/8I Sst	128	
113550	Washer Flat Sae 1/2I Sst	32	
129692	Nut Hex Std 1/2-13 Sstpat	16	
131862	Hex Cap 1/2X2-1/4 Sst	16	
250586	Hdw Pkg We-Go-Round Brake Cover	1	
100173	Bhcs 6Lp 3/8X2i Sst Pat	16	
100175	Bhcs 6Lp 3/8X2-3/4I Sst	2	
100353	Flg Nut 6Lp 3/8-16 Sst	8	
100365	Washer Flat Sae 3/8I Sst	8	
151421	Fhcs 6Lp 3/8X1-1/2Isst W/Patch	12	
250587	Hdw Pkg We-Go-Round Perf Panel W/O Seat	1	
100196	Bhcs 6Lp 3/8X7/8I Sst	8	
100349	Nut L/C Cap 3/8-16 Sst	8	
100353	Flg Nut 6Lp 3/8-16 Sst	8	
100365	Washer Flat Sae 3/8I Sst	25	
113550	Washer Flat Sae 1/2I Sst	8	
123224	Bhcs 6Lp 3/8X1-11/16I Sst	9	
293793	Hdw Pkg We-Go-Round Perf Panel W/Seat	3	
100196	Bhcs 6Lp 3/8X7/8I Sst	12	
100327	Nut Hex Std 3/8-16 Sst	4	
100349	Nut L/C Cap 3/8-16 Sst	8	
100353	Flg Nut 6Lp 3/8-16 Sst	8	
100365	Washer Flat Sae 3/8I Sst	33	
113550	Washer Flat Sae 1/2I Sst	8	
123224	Bhcs 6Lp 3/8X1-11/16I Sst	9	
223807	Bhcs 6Lp 5/16I -18 X 3/4I Sst	17	
223956	Washer Flat Sae 5/16I Sst	17	
258581	Hdw Pkg We-Go-Round Decking	1	
100362	Washer Flat 3/8I Sst	80	
113027	Bhcs 6Lp 3/8X1-3/8I Sst	80	
250590	Hdw Pkg We-Go-Round Center Ring	1	
100196	Bhcs 6Lp 3/8X7/8I Sst	6	
100198	Bhcs 6Lp 3/8X1-1/8I Sst	2	
100349	Nut L/C Cap 3/8-16 Sst	2	
100353	Flg Nut 6Lp 3/8-16 Sst	6	
100365	Washer Flat Sae 3/8I Sst	10	
258558	Hdw Pkg We-Go-Round Labels	1	
127463	Bit Hex Tpp T27 (Torx)	1	
127872	Bhcs Torx #14 X 3/4 Sst Thread Type Ab	6	
251343	2-12 Yrs Play Safe Warning Plate Flat Large	1	
257590	No Climb/Parking Plate	1	
257592	Parking Plate	1	

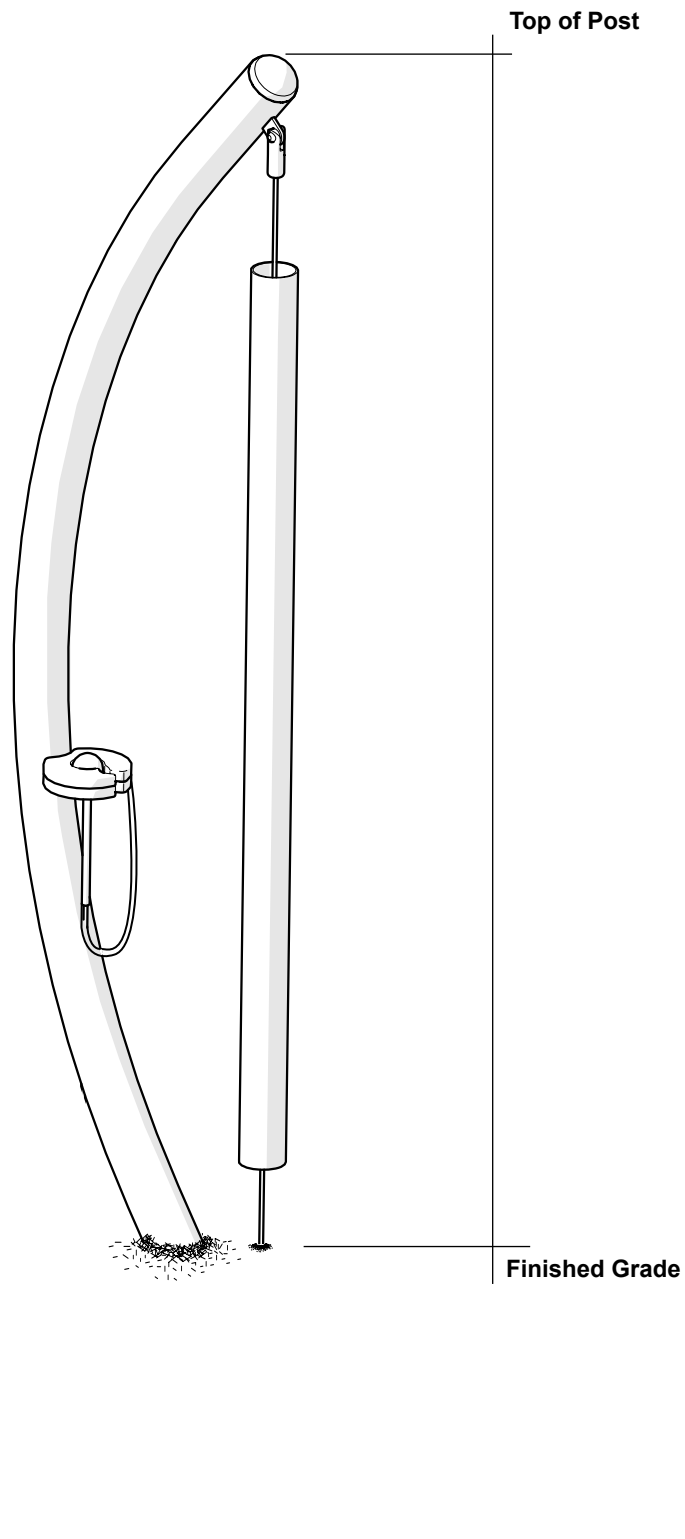
DB = Direct Bury

Center Post:	6.000" (152 mm) O.D. x (.250") (6,35 mm) wall HR Black D.O.M. zinc plated steel Tube. Finish: ProShield®, color specified.
Shock:	70 Series.
GripX Platform:	3/4" (19,05 mm) Thick recycled Permalene®, black in color.
Brake Cover:	Recycled Permalene, black in color.
Mounting Hub Assembly:	Comprised of 1/2" (12,7 mm) thick stainless steel plate, 11 Ga. (.120") (3,05 mm) stainless steel sheet, steel bearing shaft.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Bottom Rib:	7GA. (.179") (4,54 mm) Thick HRPO steel plate. Finish: ProShield, black in color.
Middle & Bottom Pipe:	Weldment comprised of 2.375" (60,32 mm) O.D. RS20 (.095"-1.105") (2,41 mm-2,66 mm) galvanized steel tube, 1/4" (6,35 mm) thick HRPO steel plate and 3/8" (9,52 mm) thick stainless steel tab. Finish: ProShield, color specified
Base Bushing:	Oil-Filled UHMW PE.
Spinner Top:	Rotationally molded from U.V. stabilized linear low density polyethylene, color specified
Rib:	Weldment comprised of 1.5" (38, 1 mm) x 3.0" (76, 2 mm) x (.180") (4, 57 mm) wall HRPO steel tube, 3/8" (9, 52 mm) thick stainless steel tab, 3/8" (9, 52 mm) O.D. stainless steel pin. 3/8" (9, 52 mm) thick HRPO steel plate with 1/4" (6, 35 mm) thick HRPO steel plate. Finish: ProShield®, color specified
Bottom Mount:	Weldment comprised of 7.000" (177 mm) O.D. x .188" (4, 77 mm) wall stainless steel tube and 1/4" (6, 35 mm) thick stainless steel plate.
Seat Permalene Panels:	3/4" thick recycled permalene, specify color
Seat Frame:	Comprised of 7 GA (.179") (4, 54 mm) thick HRPO steel plate. Finish: ProShield, specify color
DigiFuse Panel:	Made from (.120") thick aluminum sheet. Dye sublimation printed digital artwork is fused onto the powdercoated substrate.
Drain Pipe :	Comprised of 4" x 25' polypropylene perforated pipe.

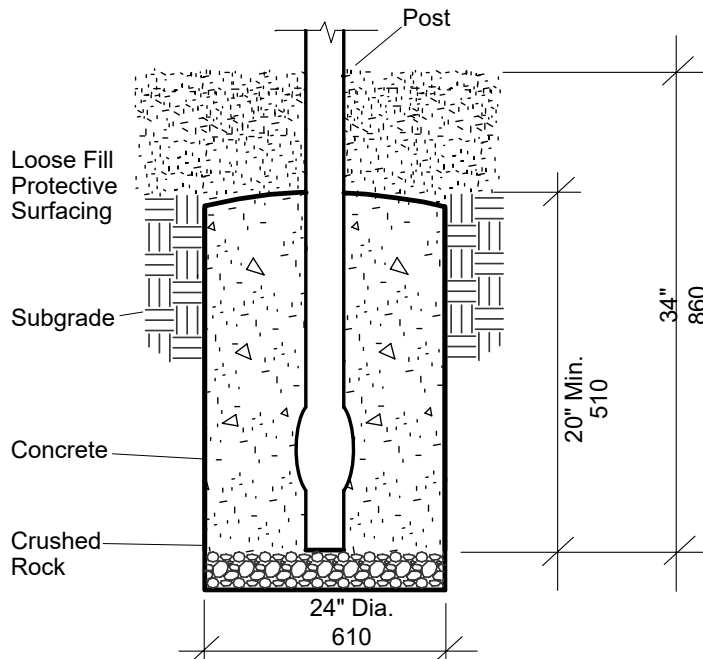
Installation Time:	DB - Approx. 40 person hours
Concrete Req.:	DB - Approx. 2.07 yards - Square Footer DB - Approx. 1.5 yards. - If concrete is chosen in Foundation II - Step 4 detail.
Weight:	DB 2 Seat - 2107 lbs. DB 3 Seat - 2165 lbs.
Minimum Area Req.:	DB - 20' 10" (6.35 m)
Fall Height:	DB - 40"

SAFETY NOTE

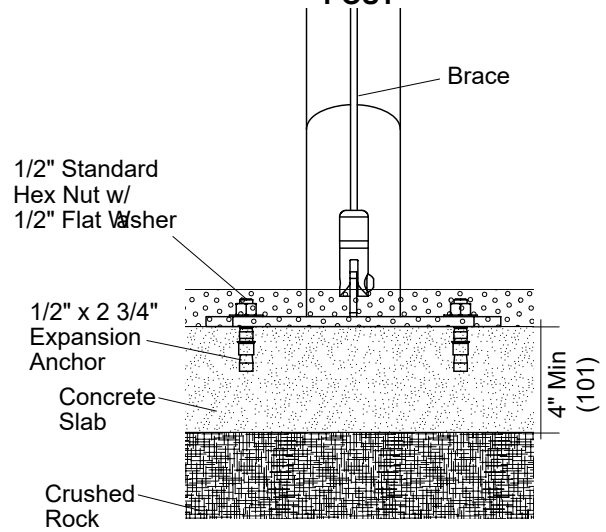
Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)



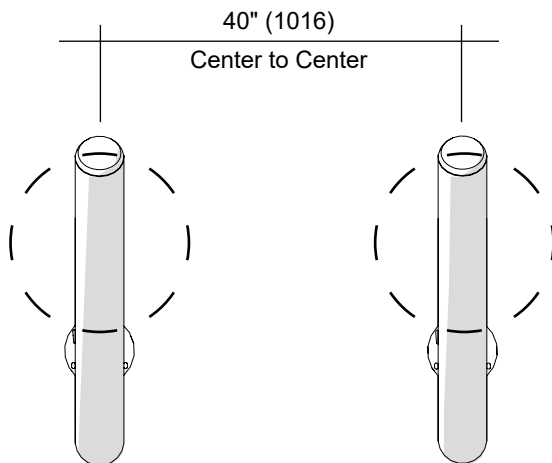
DETAIL DIRECT BURY



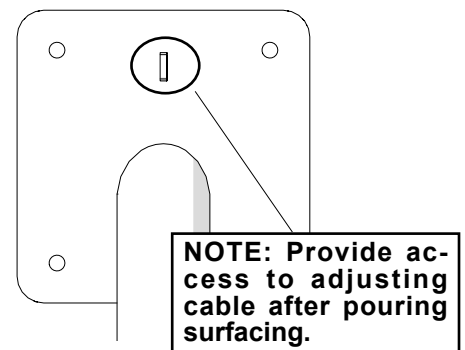
DETAIL SURFACE MOUNT POST



DETAIL Plan View

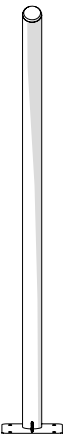
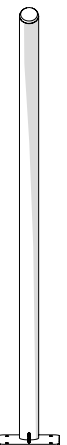
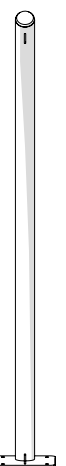
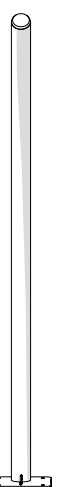
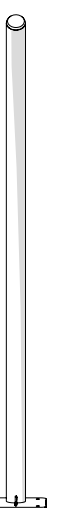
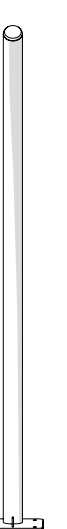




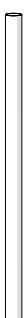















DETAIL SURFACE MOUNT

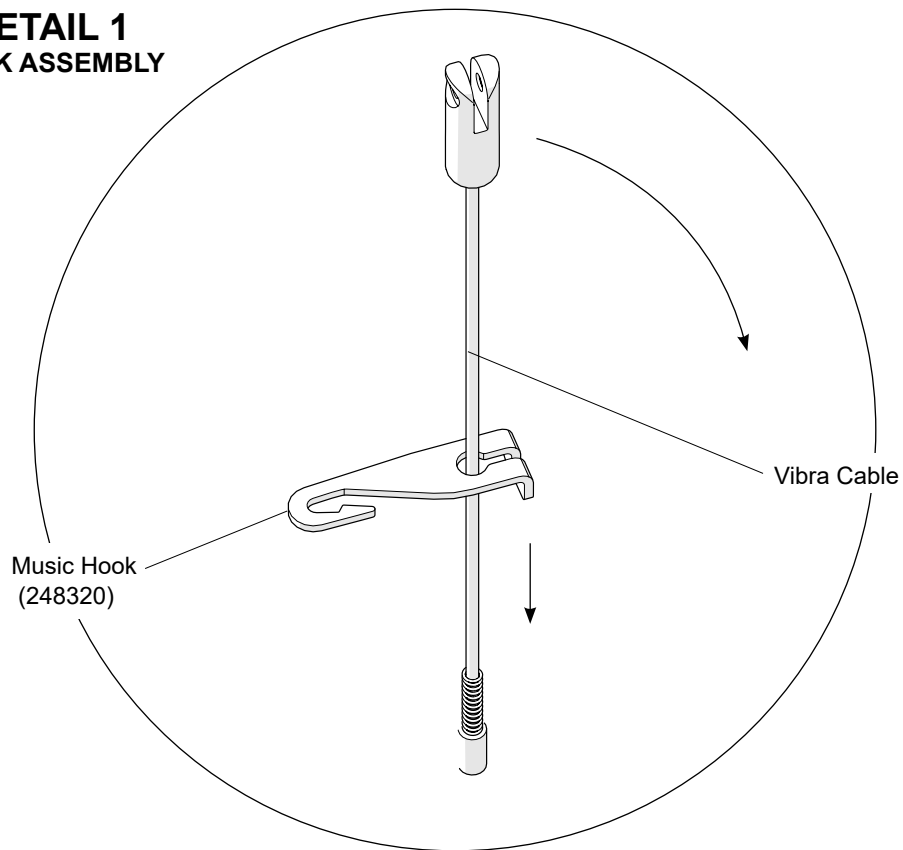


DETAIL

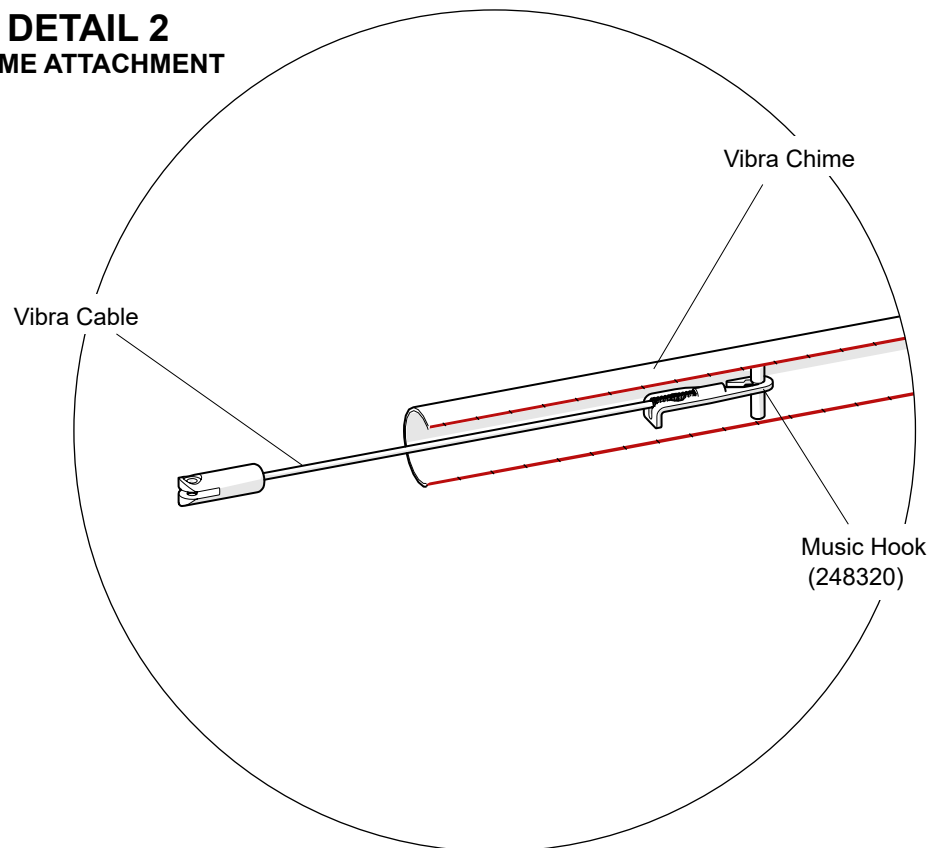
Vibra® Chime Assembly Pairings

	Vibra® Chime 8	Vibra® Chime 7	Vibra® Chime 6	Vibra® Chime 5	Vibra® Chime 4	Vibra® Chime 3	Vibra® Chime 2	Vibra® Chime 1
								
Vibra Frames	DB 251267 SM 248369 78"(1982)	DB 251268 SM 248372 80"(2032)	DB 251269 SM 248373 83" (2108)	DB 251270 SM 248374 86.5" (2197)	DB 251271 SM 248375 90" (2286)	DB 251272 SM 248376 92" (2336)	DB 251273 SM 248377 96" (2438)	DB 251274 SM 248378 100.25" (2546)
								
Vibra Notes	245516 52.5" (1320)	245514 54" (1371)	245513 57" (1447)	245512 60.5" (1536)	245511 64" (1625)	245510 66" (1676)	245509 70" (1778)	245508 74" (1879)
								
Vibra Cables	248386 (2) 18 3/4" (476)	248385 (2) 19 1/4" (489)	248384 (2) 20" (508)	248383 (2) 20 3/4" (527)	248382 (2) 21 1/2" (546)	248381 (2) 22" (558)	248380 (2) 22 7/8" (581)	248379 (2) 23 3/4" (603)

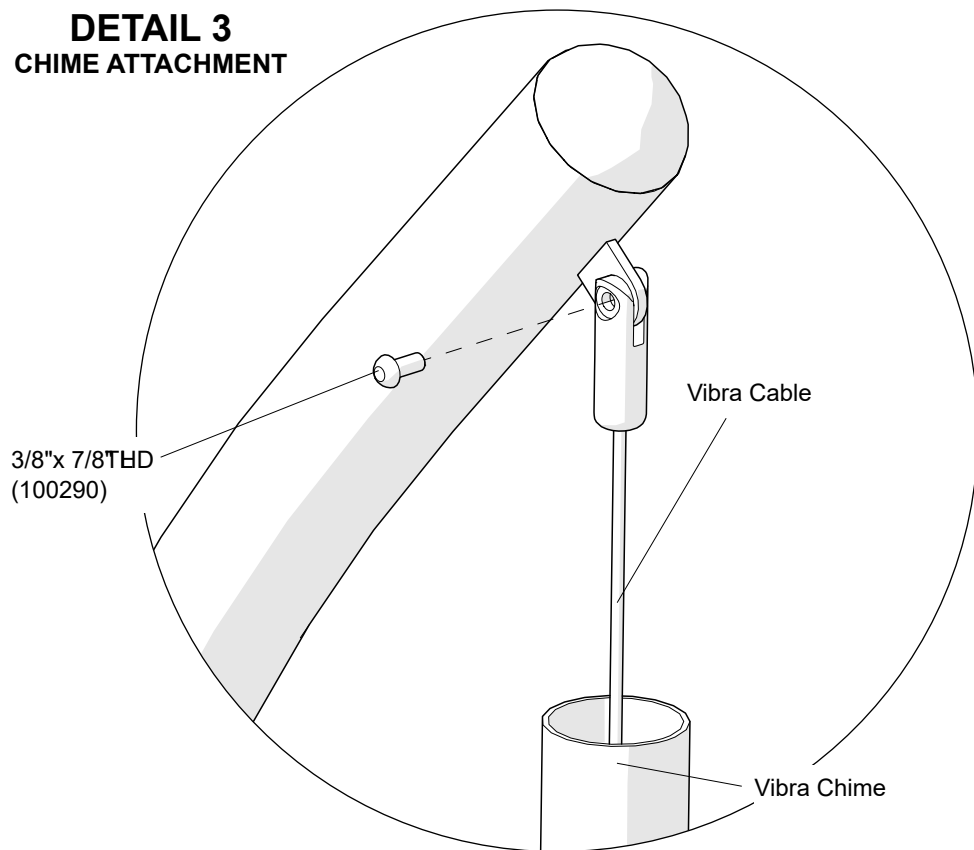
DETAIL 1 **HOOK ASSEMBLY**



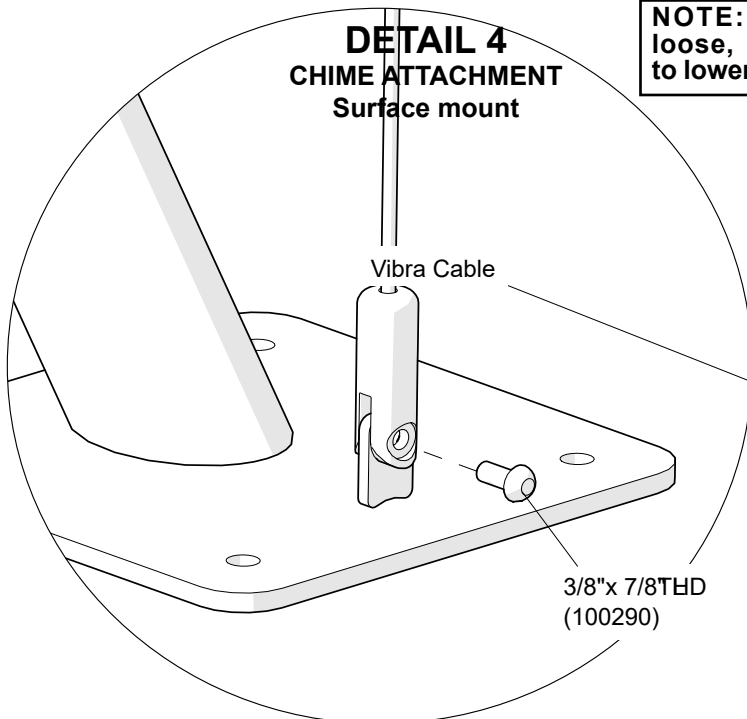
DETAIL 2 **CHIME ATTACHMENT**



DETAIL 3 CHIME ATTACHMENT

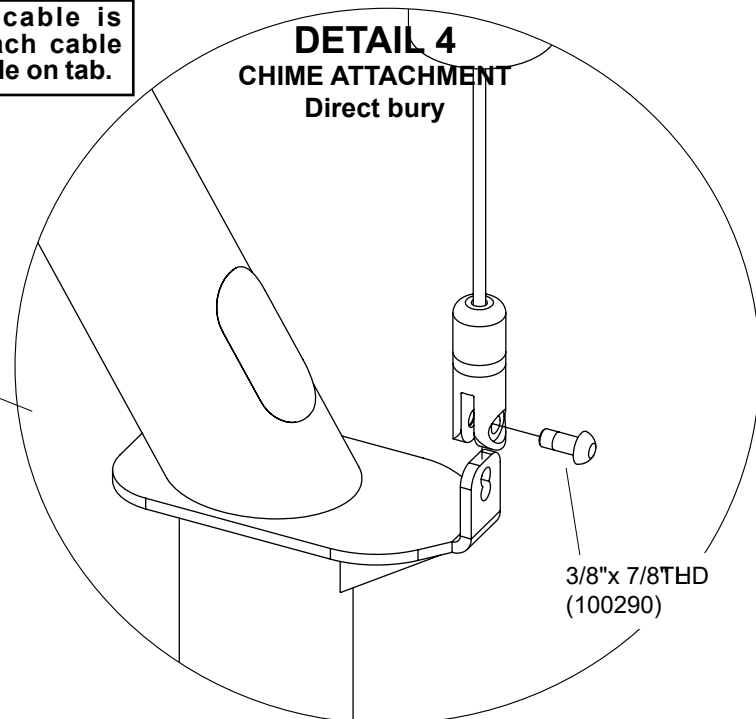


DETAIL 4 CHIME ATTACHMENT Surface mount

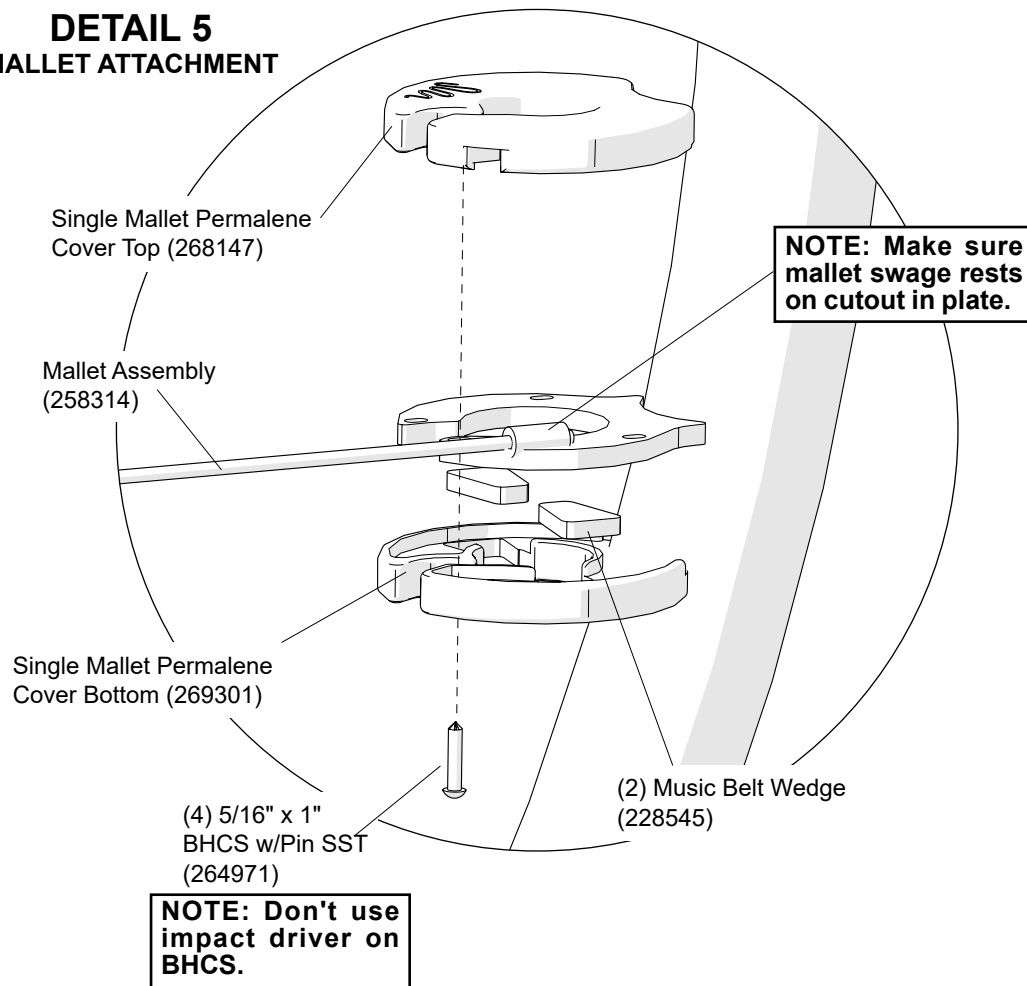


NOTE: If cable is loose, attach cable to lower hole on tab.

DETAIL 4 CHIME ATTACHMENT Direct bury



DETAIL 5 MALLET ATTACHMENT





Vibra Chimes™ Rhapsody®

Parts List - Vibra Chime 01

Part#	Description	Qty.
245508	Vibra Chime Tube Note Low C.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248379	Vibra Chime Tube Note Low C Cable.....	2
251274	Vibra Chime Frame DB 01, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248378	Vibra Chime Frame SM 01, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 02

Part#	Description	Qty.
245509	Vibra Chime Tube Note D.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248380	Vibra Chime Tube Note D Cable.....	2
251273	Vibra Chime Frame DB 02, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248377	Vibra Chime Frame SM 02, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 03

Part#	Description	Qty.
245510	Vibra Chime Tube Note E.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248381	Vibra Chime Tube Note E Cable.....	2
251272	Vibra Chime Frame DB 03, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248376	Vibra Chime Frame SM 03, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 04

Part#	Description	Qty.
245511	Vibra Chime Tube Note F.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248382	Vibra Chime Tube Note F Cable.....	2
251271	Vibra Chime Frame DB 04, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248375	Vibra Chime Frame SM 04, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 05

Part#	Description	Qty.
245512	Vibra Chime Tube Note G.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248374	Vibra Chime Frame SM 05, Specify Color.....	1
248383	Vibra Chime Tube Note G Cable.....	2
258314	Mallet Asm 55A Light Gray.....	1
251270	Vibra Chime Frame DB 05, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 06

Part#	Description	Qty.
245513	Vibra Chime Tube Note A.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248373	Vibra Chime Frame SM 06, Specify Color.....	1
248384	Vibra Chime Tube Note A Cable.....	2
258314	Mallet Asm 55A Light Gray.....	1
251269	Vibra Chime Frame DB 06, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 07

Part#	Description	Qty.
245514	Vibra Chime Tube Note B.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248372	Vibra Chime Frame SM 07, Specify Color.....	1
248385	Vibra Chime Tube Note B Cable.....	2
258314	Mallet Asm 55A Light Gray.....	1
251268	Vibra Chime Frame DB 07, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 08

Part#	Description	Qty.
245516	Vibra Chime Tube Note C.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248386	Vibra Chime Tube Note C Cable.....	2
251267	Vibra Chime Frame DB 08, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248369	Vibra Chime Frame SM 08, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

DB= Direct Bury
SM= Surface Mount



Vibra™ Chimes

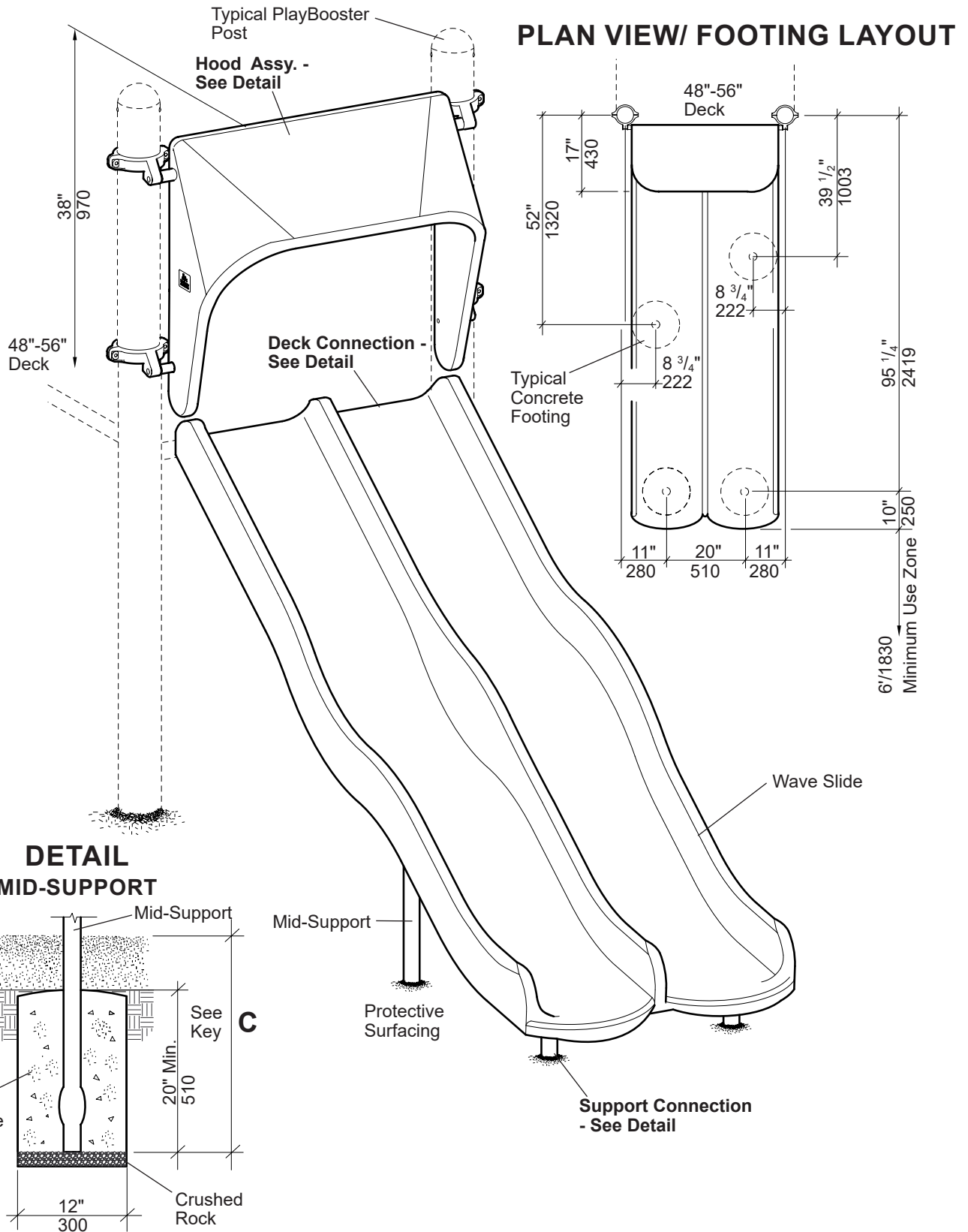
Rhapsody®

Specification

Tube:	Comprised of 3.000" (76,2 mm) O.D. x (.125") (3,17 mm) wall aluminum tubing, and 1/2" (12,7 mm) diameter aluminum rod.
Frame:	Weldment comprised of 3.500" (88,9 mm) O.D. RS20 (.125") (3,17 mm) wall galvanized steel tubing, 1/4" stainless steel sheet and 3/8" (9,50 mm) thick HRPO steel sheet. Finish: ProShield®, color specified
Mallet:	Comprised of 2" (50,8 mm) diameter light grey polyurethane, 1/2" (12,7 mm) diameter aluminum handle and 3/16" (4,74 mm) stainless steel cable with nylon coating.
Mallet Mount:	Permalene®, color specified
Cables:	Comprised of 3/16" (4,74 mm) diameter stainless steel cable with nylon coating.
Music Hook:	Fabricated from 7 GA. (.188") (4,77 mm) stainless steel. Finish: TenderTuff coated. Gray in color.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 1 person hours per chime.
Weight:	Chime 8 - DB 47 lbs. Chime 8 - SM 59 lbs. Chime 7 - DB 48 lbs. Chime 7 - SM 60 lbs. Chime 6 - DB 50 lbs. Chime 6 - SM 62 lbs. Chime 5 - DB 51 lbs. Chime 5 - SM 63 lbs. Chime 4 - DB 53 lbs. Chime 4 - SM 65 lbs. Chime 3 - DB 54 lbs. Chime 3 - SM 66 lbs. Chime 2 - DB 56 lbs. Chime 2 - SM 68 lbs. Chime 1 - DB 58 lbs. Chime 1 - SM 70 lbs.
Concrete:	5.24 Cubic Feet DB

Installation Instructions

- 1) **(Direct Bury)** Dig footing holes. Refer to the PlanView & Direct Bury Details.
 - 2) Attach cable to hooks. Refer to Detail 1.
 - 3) Attach hook to chime. Refer to Detail 2.
 - 4) Attach to Chime Frame on top and bottom. Refer to Detail 3, 4.
 - 5) Attach mallet to frame. Refer to Detail 5.
-
- 1) **(Surface Mount)** With sign in proper position, using 1/2" masonry bit and hammer drill, drill 3" deep holes into concrete slab through holes in post plate. Tap 1/2" x 2 3/4" expansion anchors into holes and secure using 1/2" standard hex nuts with 1/2" flange washers.
 - 2) Attach cable to hooks. Refer to Detail 1.
 - 3) Attach hook to chime. Refer to Detail 2.
 - 4) Attach to Chime Frame on top and bottom. Refer to Detail 3, 4.
 - 5) Attach mallet to frame. Refer to Detail 5.
 - 6) Install protective surfacing before users are allowed to play with component.



PlayBooster® 123336 Double Wave Slide, 48"-56"

Sheet 1 of 2

Parts List

Part#	Description	Qty.
130716	48" - 56" Double Wave Slide, Specify Color	1
131987	Hood, Specify Color.....	1
105327	5" Half Clamp, Specify Color	4
113729	Offset Hanger Clamp, Specify Color	4
100583	40 7/16" Aluminum Rail, Specify Color.....	1
113468	Spacer Tube, Specify Color.....	2
116908	64" Mid-Support (DB), Specify Color	1
116917	54" Mid-Support (DB), Specify Color	1
134565	28 1/2" Mid-Support, 48" Deck(SM),Specify Color	1
134567	18 1/2" Mid-Support, 48" Deck(SM),Specify Color	1
116920	36" Mid-Support, 56" Deck (SM), Specify Color.....	1
116921	26" Mid-Support, 56" Deck (SM), Specify Color.....	1
150941	Support (DB), Specify Color.....	2
151013	Support 48" Deck (SM), Specify Color.....	2
151003	Support 56" Deck (SM), Specify Color.....	2
132443	Rail Spacer, Specify Color	2

116943	Slide Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	4
100292	3/8" x 1 1/4" BHCS w/Pin Ltd. Thread Bolt, SST.....	8
100362	3/8" Flat Washer, SST	12
100365	3/8" SAE Flat Washer, SST.....	8
111442	Rubber Bushing.....	8

106577	Hood Hardware Package	1
100198	3/8" x 1 1/8" BHCS w/Pin, SST	8
100200	3/8" x 3 1/2" BHCS w/Pin, SST	2
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100351	3/8" Tee Nut, SST.....	8
100362	3/8" Flat Washer, SST	2
100610	1/4" x 5/8" Drive Rivet, AL/SST	4

121348	4 Hole (SM) Hardware Package	2
100266	1/2" x 2 3/4" Expansion Anchor	8
100322	1/2" Standard Hex Nut, SST	8
100363	1/2" Flat Washer, SST	8

DB = Direct Bury
SM = Surface Mount

Specification

Slide:	Rotationally molded from U.V. stabilized linear low-density polyethylene, color specified
Mid-Support:	Weldment comprised of 1.660" O.D. RS-20 (.085" - .095") galvanized steel tubing and 1/4" x 3" flat steel. Finish: ProShield®, color specified
Support:	Weldment comprised of 2.375" O.D. RS-20 (.095" - .105") galvanized steel tubing and 1/4" x 3" mounting plate. Finish: ProShield, color specified
Hood:	Rotationally molded from U.V. stabilized linear low-density polyethylene, color specified
Rail:	Extruded from 1.125" O.D. x .312" W. 6005-T5 aluminum. Finish: ProShield, color specified
Rail Spacer:	Fabricated from 1.3125 O.D. x 16 Ga. (.065) steel tubing. Finish: ProShield, color specified
Spacer Tube:	Made from 6061-T6 aluminum 7/8" O.D. x 1 11/16". Finish: ProShield, color specified

Offset Hanger	
Clamp Assembly:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	(DB) - 3 man hours (SM) - 2 man hours
Concrete Req.:	Approx. 5.2 cu. ft.
Area Req.:	6' (1,82 m) minimum use zone at exit.
Weight:	(DB) - 174 lbs. (SM) - 158 lbs.
Fall Height:	Deck Height

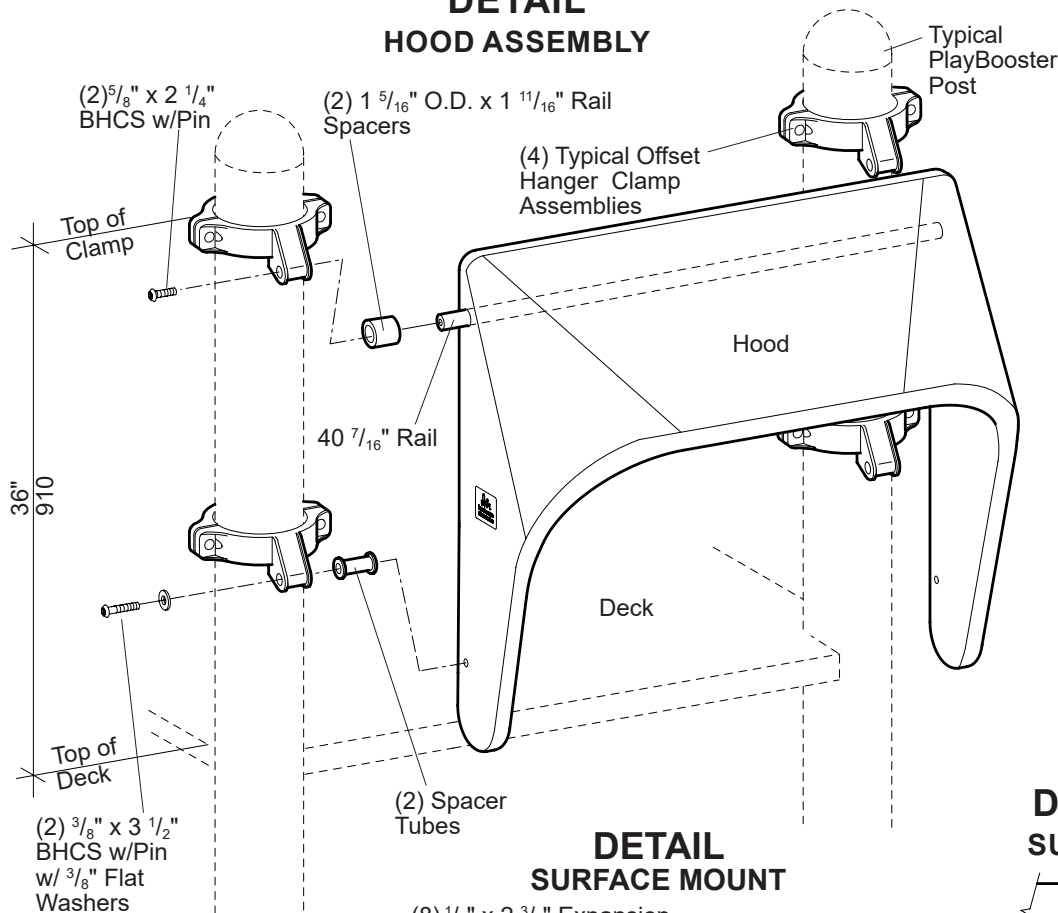
Installation Instructions

- 1) **(Direct Bury)** Dig footings spaced as shown. Refer to the Key for the exit support and mid-support depths of bury.
- 2) Insert 40 7/16" rail through top of hood, place rail spacer tube on each end of the 40 7/16" rail and attach to posts at height shown using offset hanger clamp assemblies. Refer to the Typical Offset Hanger Clamp Spec Sheet. Fasten bottom of hood using 3/8" x 3 1/2" BHCS w/Pin with 3/8" flat washers through clamps, spacer tubes and into threaded inserts in hood. Refer to the Hood Assembly Detail.
- 3) Attach mid-supports and exit supports to slide using 3/8" x 1 1/4" BHCS w/Pin limited thread bolts, 3/8" SAE flat washers, rubber bushings and 3/8" flat washers. Refer to the Support Detail and the Mid-Support Detail. **NOTE: Attach bolts in the center of the slots to allow for expansion and contraction. Snug bolts down only, do not over-tighten!**
- 4) Attach slide to the face of the deck using 3/8" x 7/8" BHCS w/Pin with 3/8" flat washers. Refer to the Deck Connection Detail.
- 5) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Offset Hanger Clamp Spec Sheet.
- 6) **(Direct Bury)** With supports plumb pour concrete footings. Allow concrete footings to cure for a minimum of 72 hours before users are allowed to play on the structure.

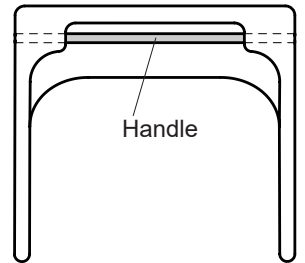
(Surface Mount) Mark anchor bolt locations on concrete slab through holes in anchor plates and remove wave slide. Drill 1/2" x 3" deep holes on marks into concrete using a hammer drill and 1/2" masonry bit. Tap expansion anchors into drilled holes. Reposition wave slide and reattach to the face of the deck following step 4. Fasten supports to expansion anchors using 1/2" standard hex nuts with 1/2" flat washers

- 7) Install protective surfacing before users are allowed to play on the structure.

**DETAIL
HOOD ASSEMBLY**



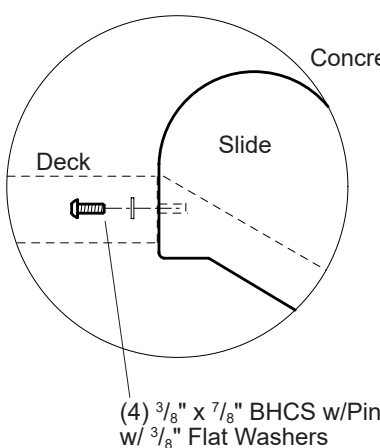
HOOD - HANDLE DETAIL



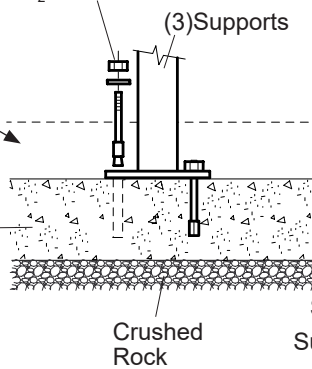
**DETAIL
SURFACE MOUNT**

NOTE: Sufficient protective surfacing must cover hardware to satisfy fall height requirements.

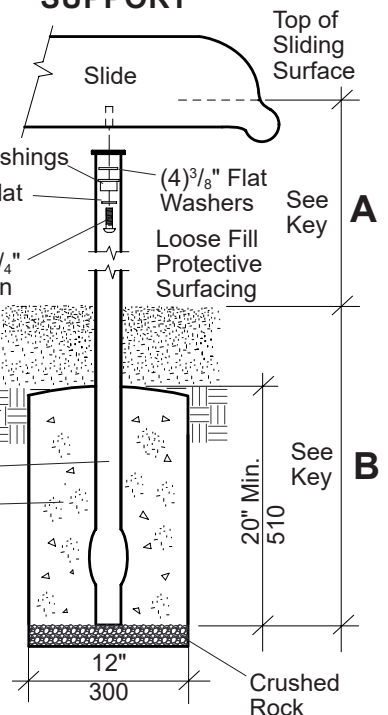
**DETAIL
DECK CONNECTION**



(8) 1/2" x 2 3/4" Expansion Anchors w/ 1/2" Flat Washers & 1/2" Standard Hex Nuts



**DETAIL
SUPPORT**

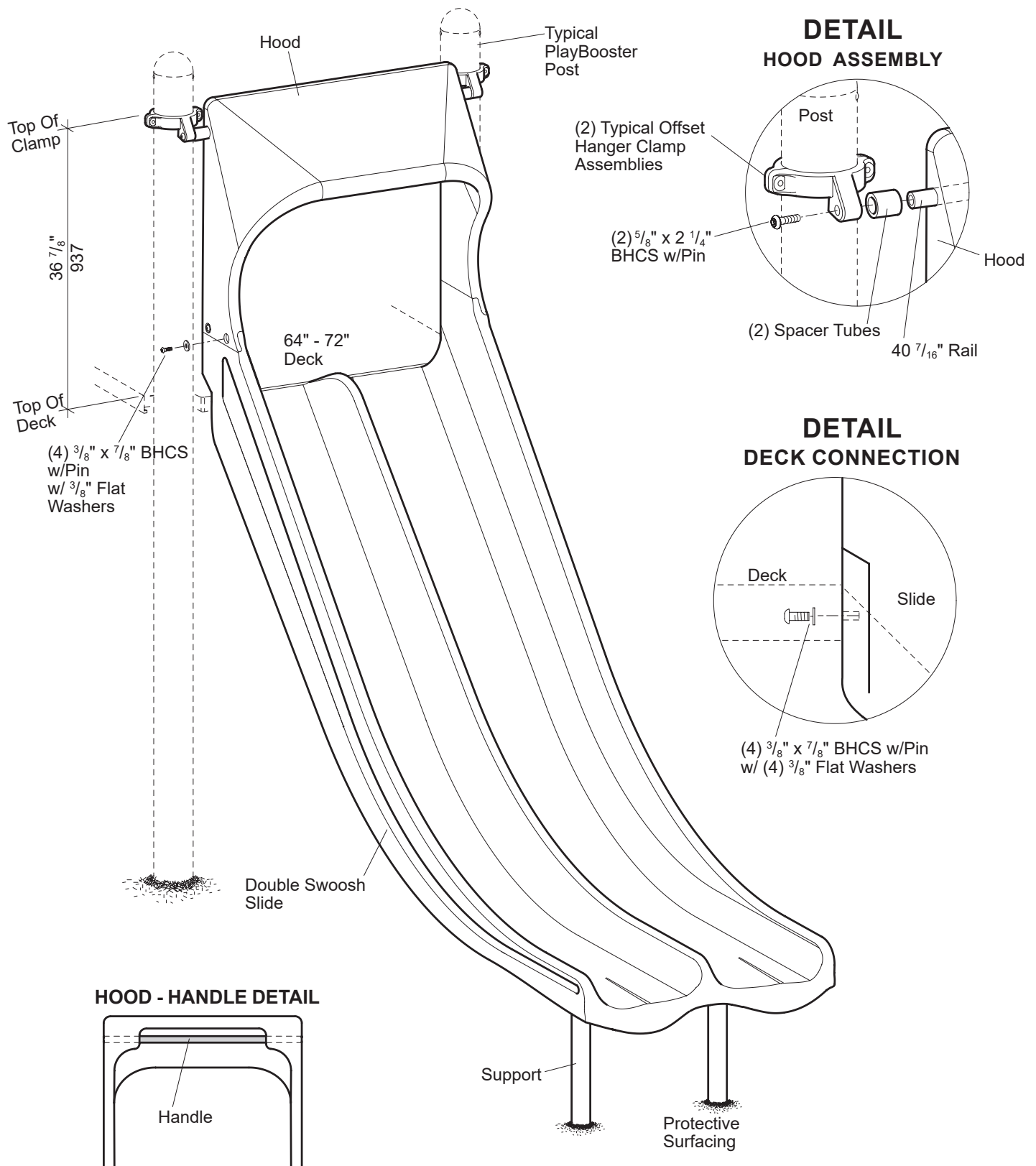


KEY:

Deck Hgt.

Dimension

48"	A = 4 1/4"/108
56"	A = 11"/280
48"	B = 37 3/4"/959
56"	B = 31"/790
48"	C = 37"/940
56"	C = 30"/760



PlayBooster® 130390 Double Swoosh™ Slide, 64"-72"

Sheet 1 of 2

Parts List

Part#	Description	Qty.
128823	Double Swoosh Slide, 64"/72", Specify Color.....	1
128777	Slide Hood, Specify Color.....	1
100583	40 7/16" Aluminum Rail, Specify Color.....	1
132443	Spacer Tube, Specify Color.....	2
105327	5" Half Clamp, Specify Color.....	2
113729	Offse Hanger Clamp, Specify Color.....	2
100610	1/4" x 5/8" Drive Rivet AL/SST.....	2
150941	Support (DB), Specify Color.....	2
151021	Support 64" Deck (SM), Specify Color.....	2
151022	Support 72" Deck (SM), Specify Color.....	2
264735	Double Swoosh Slide Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	8
100203	5/8" x 2 1/4" BHCS w/Pin, SST	2
100292	3/8" x 1 1/4" BHCS w/Pin Ltd. Thread Bolt, SST.....	4
100351	3/8" Tee Nut, SST.....	4
100362	3/8" Flat Washer, SST	16
111442	Rubber Bushing.....	4
100198	3/8"x 1 1/8" BHCS w/Pin, SST	4
121348	4 Hole (SM) Hardware Package	1
100266	1/2" x 2 3/4" Expansion Anchor.....	4
100322	1/2" Standard Hex Nut, SST	4
100363	1/2" Flat Washer, SST	4

DB = Direct Bury

SM = Surface Mount

Specification

Slide:	Rotationally molded from U.V. stabilized linear low density polyethylene, color specified
Spacer Tube:	Fabricated from 1.3125 O.D. x 16 Ga. (.065) steel tubing. Finish: ProShield®, color specified
Hood:	Rotationally molded from U.V. stabilized linear low density polyethylene, color specified
Rail:	Extruded from 1.125" O.D. x .312" W. 6005-T5 aluminum. Finish: ProShield, color specified
Support:	Weldment comprised of 2.375" O.D. RS-20 (.095" - .105") galvanized steel tubing and 1/4" x 3" mounting plate. Finish: ProShield, color specified
Offset Hanger Clamp Assembly:	Cast aluminum. Finish: ProShield, color specified
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specifi product installation/specifications)
Installation Time:	SM - Approx. 2 man hours DB - Approx. 3 man hours
Concrete Req.:	Approx. 2.6 cu. ft.
Area Req.:	6' (1,83 m) minimum use zone at exit
Weight:	179 lbs.
Fall Height:	64" (1,63 m) Deck Height 6' (1,83 m) Deck Height

Installation Instructions

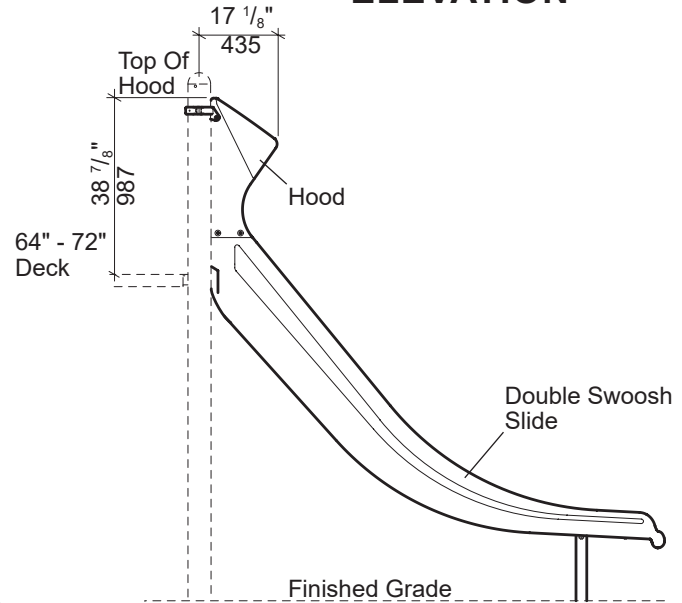
Direct Bury

- 1) Dig footings spaced as shown.
- 2) Attach the supports to the slide using 3/8" x 1 1/4" BHCS w/Pin limited thread bolts, 3/8" fla washers, rubber bushings and 3/8" fla washers. Refer to the Support Attachment Detail.
- 3) Attach the slide to the face of the deck using 3/8" x 7/8" BHCS w/Pin with 3/8" fla washers. Refer to the Deck Connection Detail.
- 4) Attach the slide hood to the slide using 3/8" x 7/8" BHCS w/Pin with 3/8" fla washers.
- 5) Insert 40 7/16" rail through top of hood, place spacer tubes over each end of the 40 7/16" rail and attach to posts at height shown using offse hanger clamp assemblies. Refer to the Typical Offse Hanger Clamp Spec Sheet.
- 6) Prop the end of the slide according to the proper deck height. With support plumb pour concrete footings. Allow concrete footing to cure for a minimum of 72 hours before users are allowed to play on the structure.
- 7) Install protective surfacing before users are allowed to play on the structure.

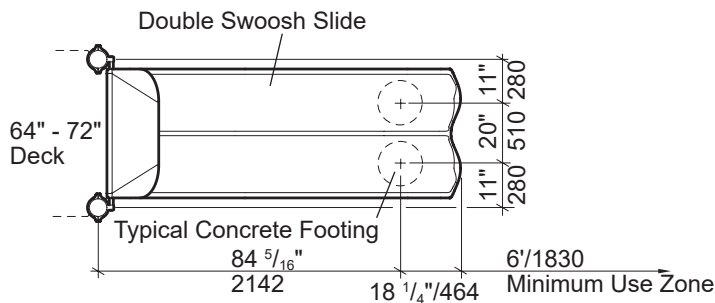
Surface Mount

- 1) Attach the supports to the slide using 3/8" x 1 1/4" BHCS w/Pin limited thread bolts, 3/8" fla washers, rubber bushings and 3/8" fla washers. Refer to the Support Detail.
- 2) Attach the slide to the face of the deck using 3/8" x 7/8" BHCS w/Pin with 3/8" fla washers. Refer to the Deck Connection Detail.
- 3) Mark anchor bolt locations on concrete slab through holes in anchor plates and disconnect slide from the face of the deck. Drill 1/2" x 3" deep holes on marks into concrete using a hammer drill and 1/2" masonry bit. Tap expansion anchors into drilled holes. Reposition slide and reattach to the face of the deck following step 2. Fasten support to expansion anchors using 1/2" standard hex nuts with 1/2" fla washers.
- 4) Attach the slide hood to the slide using 3/8" x 7/8" BHCS w/Pin with 3/8" fla washers.
- 5) Insert 40 7/16" rail through top of hood, place spacer tubes over each end of the 40 7/16" rail and attach to posts at height shown using offse hanger clamp assemblies. Refer to the Typical Offse Hanger Clamp Spec Sheet.
- 6) Install protective surfacing before users are allowed to play on the structure.

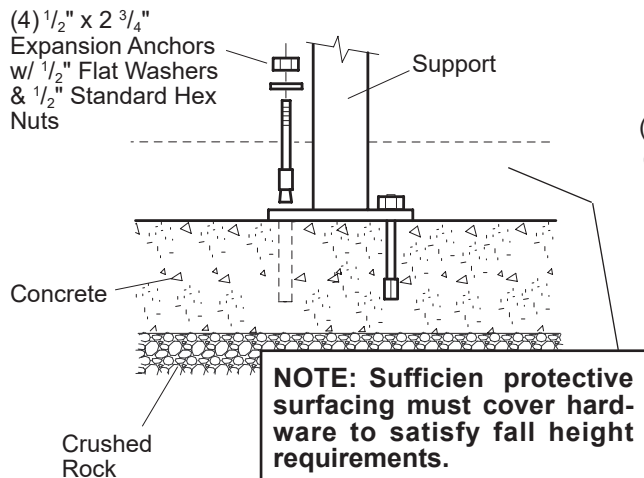
ELEVATION



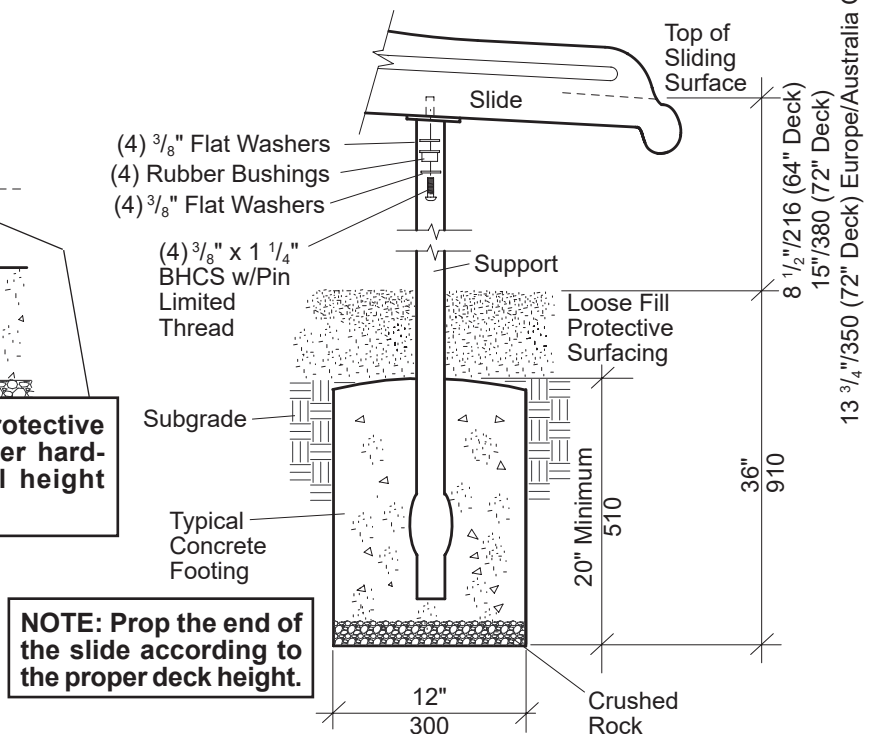
PLAN VIEW/FOOTING LAYOUT



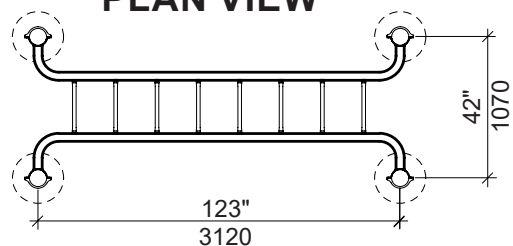
DETAIL SURFACE MOUNT



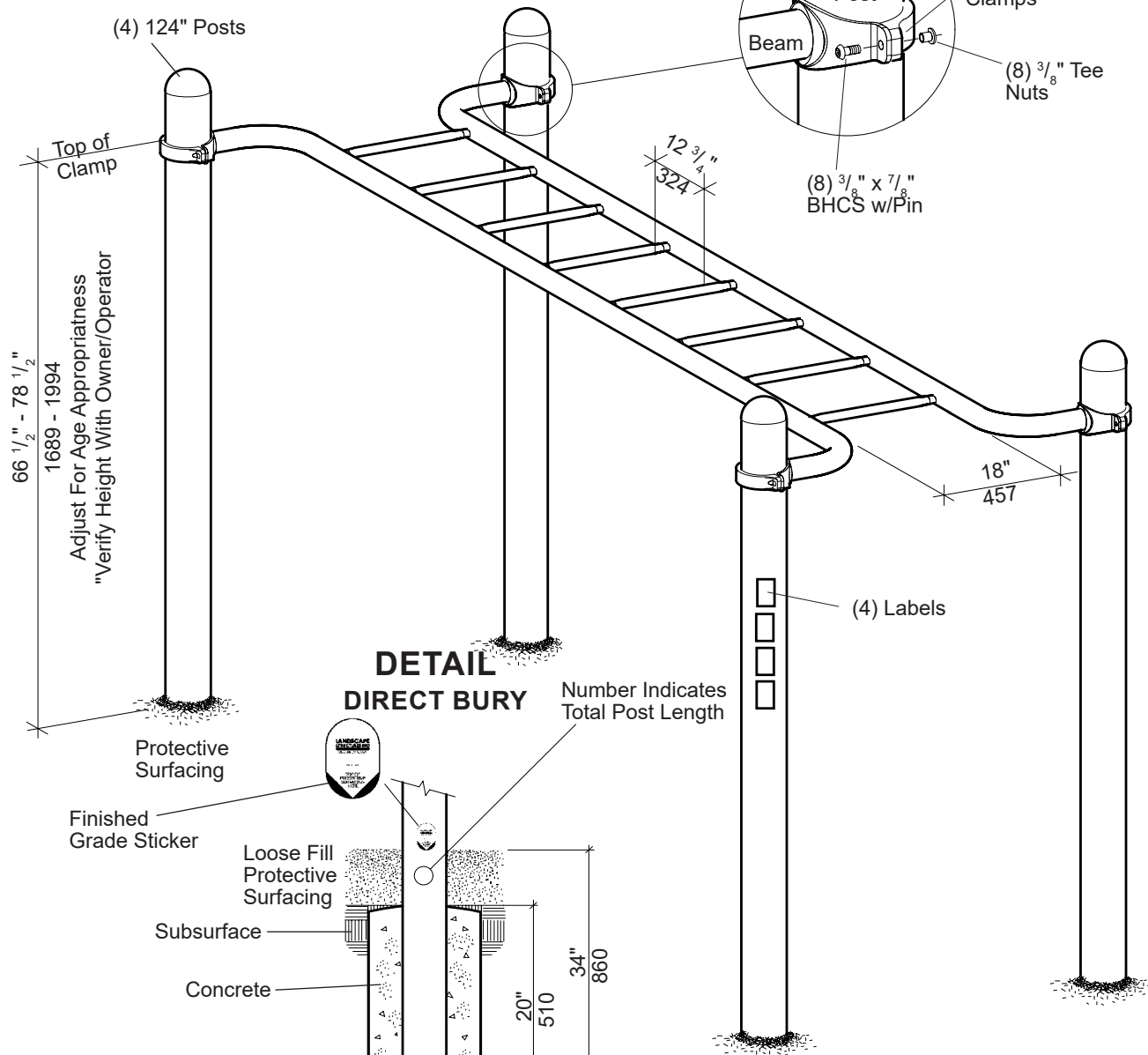
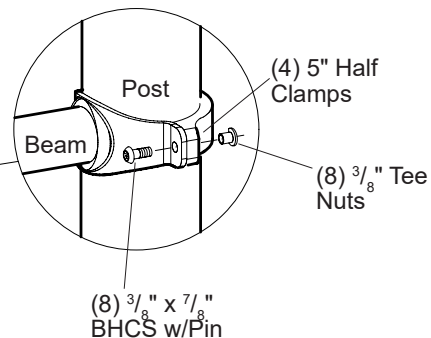
DETAIL SUPPORT ATTACHMENT



PLAN VIEW



**DETAIL
BEAM ATTACHMENT**



Sports & Fitness

137962 Horizontal Ladder

Part#	Description	Qty.
145931	Horizontal Ladder, Specify Color	1
105327	5" Half Clamp, Specify Color	4
107525	Steel 124" Post (DB), Specify Color	4
107700	Aluminum 124" Post (DB), Specify Color	4
100610	1/4" x 5/8" Drive Rivet, AL/SST	4
182693	Labels 5-12YRS. Hardware Package	1
115176	Hard Surface Warning Label ASTM	1
156847	Play Safe Label 5-12 YRS.	1
182212	Entanglement Warning	1
182213	Hot Surface Warning Label	1
149233	Horizontal Ladder, Hardware Package	1
100196	3/8" x 7/8" BHCS w/Pin, SST	8
100351	3/8" Tee Nut, SST	8

DB = Direct Bury

Specification

Post: See PlayBooster® (PB) General Specifications

Horizontal Ladder: Weldment comprised of 2.375" O.D. RS-40 (.130"-.140") galvanized steel tubing, 1.315 O.D. RS-20 (.080"-.090") galvanized steel tubing and 1/4" HRPO flat steel. Finish: ProShield, color specific

Half Clamp: Cast aluminum. Finish: ProShield, color specified

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: DB - Approx. 4 man hours

Concrete Req.: Approx. 7.5 cu. ft.

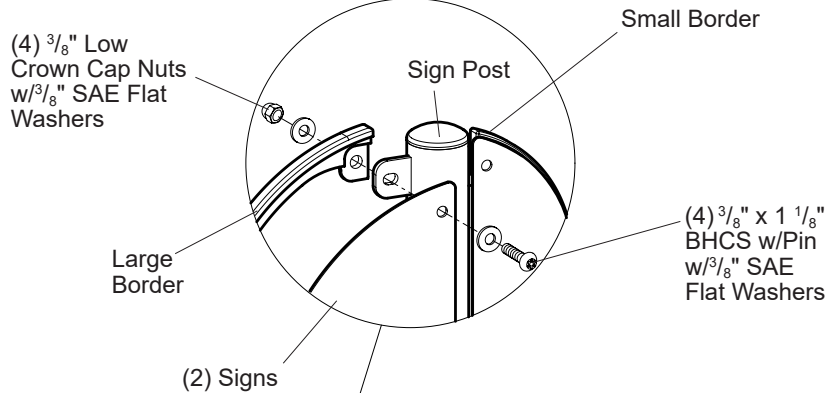
Weight: 213 lbs. Aluminum
378 lbs. Steel

Fall Height: 67" - 79" (1,70 m - 2,00 m)

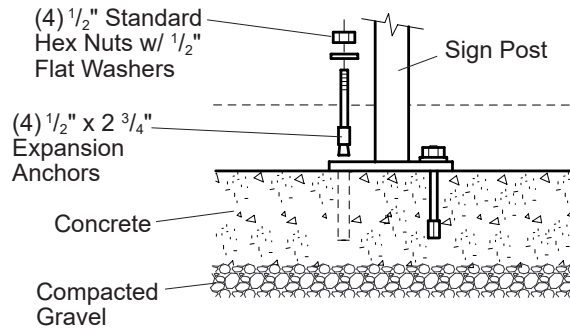
Installation Instructions

- 1) Dig footing holes spaced as shown.
- 2) Mark posts for the appropriate height of the ladder you are installing.
- 3) Lift ladder into position and attach to posts using 5" half clamps with 3/8" x 7/8" BHCS w/pin and 3/8" tee nuts.
- 4) Be sure ladder is level, if not, adjust clamps to do so.
- 5) With posts plumb and ladder level, pour concrete footings. Allow concrete footings to cure a minimum of 72 hours before users are allowed to play on the structure.
- 6) Apply Labels, as shown.
- 7) Install 1/4" x 5/8" drive rivets in all 5" half clamps. Refer to the Typical Hanger Clamp Detail.
- 8) Install protective surfacing before users are allowed to play on the structure.

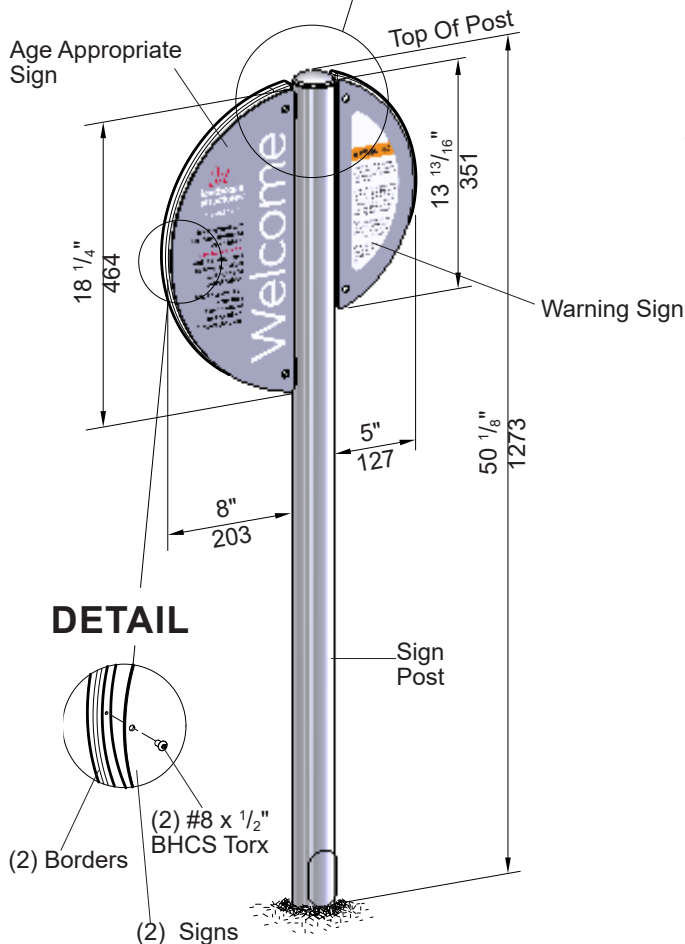
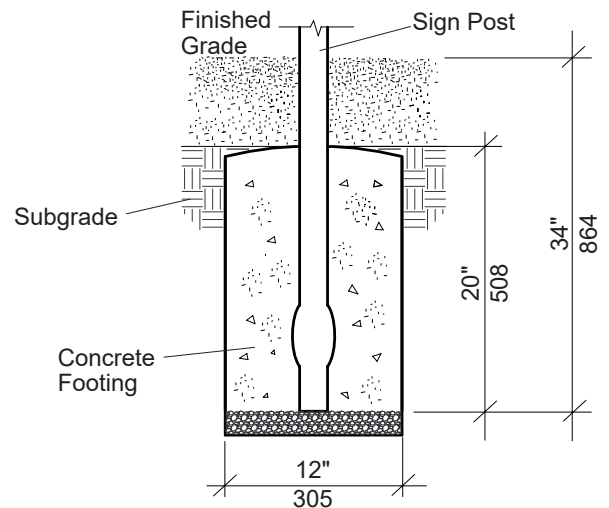
DETAIL SIGN ATTACHMENT



DETAIL SURFACE MOUNT



DETAIL DIRECT BURY FOOTING



Model 182503 - Landscape Structures Provided Welcome Sign
Model 182504 - Welcome Sign

Signs

Welcome Sign

Parts List

Part#	Description	Qty.
219911	Warning Sign, Gray	1
219912	Age Appropriate Sign, 2-12 Years, Gray	*
219913	Age Appropriate Sign, 2-5 Years, Gray	*
219914	Age Appropriate Sign, 5-12 Years, Gray	*
219915	Age Appropriate Sign, 1 1/2-5 Years, Gray	*
219916	Age Appropriate Sign, 1 1/2-12 Years, Gray	*
219918	Age Appropriate Sign, 6-23 Months, Gray	*
180598	Sign Post (DB), Specify Color	*
181119	Sign Post (SM), Specify Color	*
193782	Large Border, Black	1
193783	Small Border, Black	1
213258	Age/Warning Sign Hardware Package	1
100198	3/8" x 1 1/8" BHCS w/Pin, SST	4
100349	3/8" Low Crown Cap Nut, SST	4
100365	3/8" SAE Flat Washer, SST	8
168323	#8 x 1/2" BHCS Torx, SST	2
169413	1/4-6 Lobe T-15 Tamp. Bit	1
121348	4 Hole (SM) Hardware Package	1
100266	1/2" x 2 3/4" Expansion Anchor	4
100322	1/2" Standard Hex Nut, SST	4
100363	1/2" Flat Washer, SST	4

DB = Direct Bury

SM = Surface Mount

* = Quantity Determined By Your Order

Specification

Sign Panel: Panel is fabricated from 1/8" (.125")(3,17 mm) aluminum plate. Finish: ProShield®, gray in color. **(Sign)** Digital image is transferred to a 1/8" (.125")(3,17 mm) ProShield coated aluminum plate, then infused into the ProShield.

Border: Permalene, black in color.

Post: Weldment comprised 2.375" (60,33 mm) O.D. RS20 (.095-.105) (2,41 mm-2,67 mm) wall galvanized tube, 1/4" (6,35 mm) HRPO steel sheet and aluminum post cap. Finish: ProShield, color specified

Fasteners: Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)

Installation Time: **(DB)** Approx. 1 man hour
(SM) Approx. 1/2 man hour

Concrete Req: Approx. 1.31 cu. ft.

Weight: **(DB)** - 24 lbs.
(SM) - 27 lbs.

Installation Instructions

Direct Bury

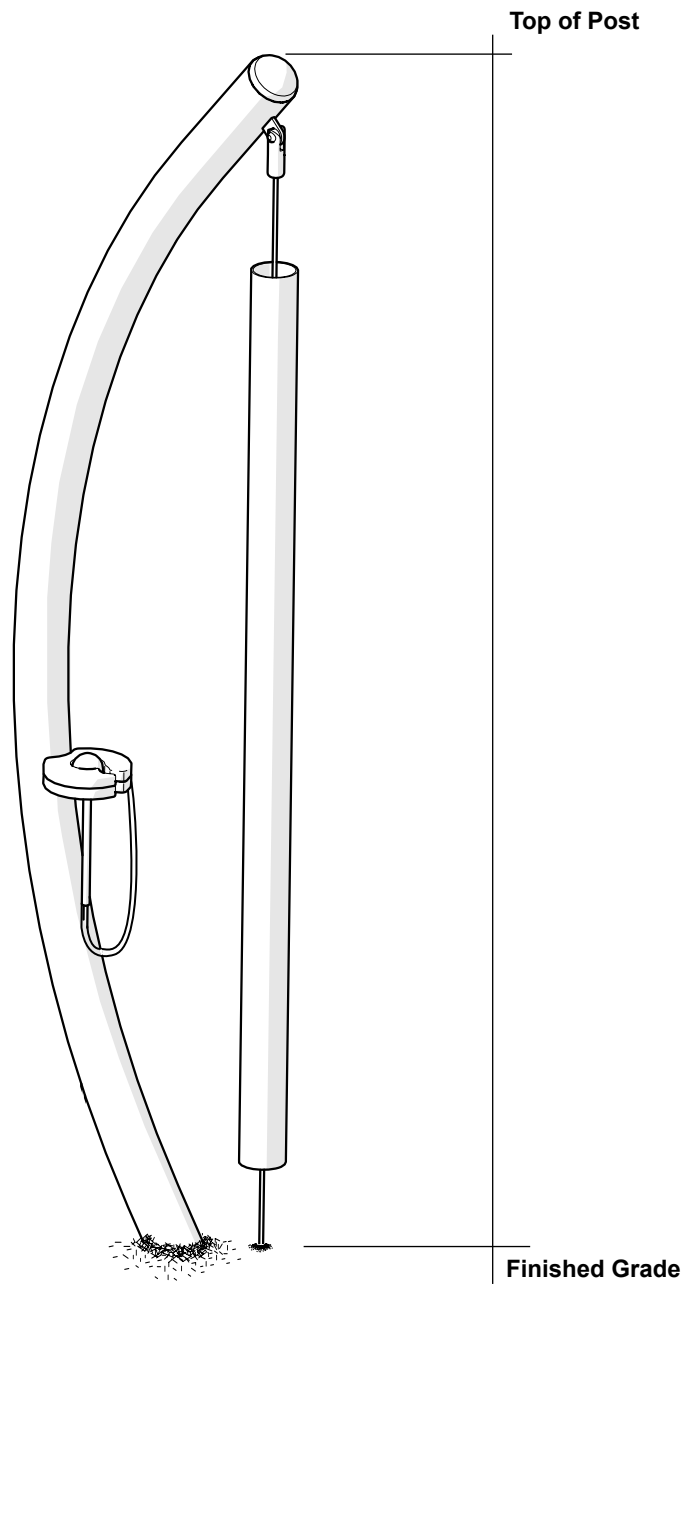
- 1) Dig footing hole to depth and diameter shown.
- 2) Attach sign panels and borders to post as shown, using 3/8" x 1 1/8" BHCS with 3/8" SAE flat washers and 3/8" low crown cap nuts with 3/8" SAE flat washers. Attach signs to borders using #8 x 1/2" BHCS Torx.
- 3) Set sign assembly in footing hole and temporarily brace in plumb position.
- 4) Pour concrete footing. After concrete has cured, remove bracing.

Surface Mount

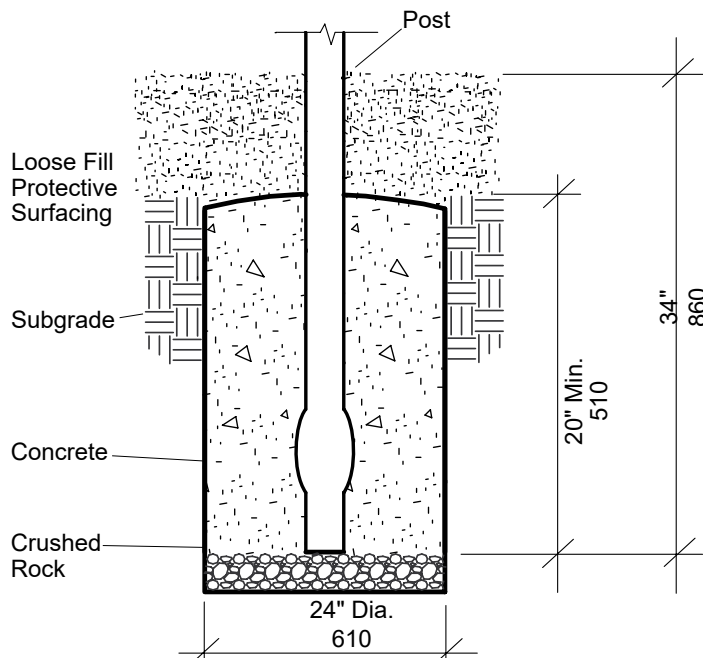
- 1) Attach sign panels and borders to post as shown, using 3/8" x 1 1/8" BHCS with 3/8" SAE flat washers and 3/8" low crown cap nuts with 3/8" SAE flat washers. Attach signs to borders using #8 x 1/2" BHCS Torx.
- 2) With sign in proper position, using a 1/2" masonry bit and hammer drill, drill 3" deep holes into concrete slab through holes in post plate. Tap 1/2" x 2 3/4" expansion anchors into holes and secure using 1/2" standard hex nuts with 1/2" flat washers

SAFETY NOTE

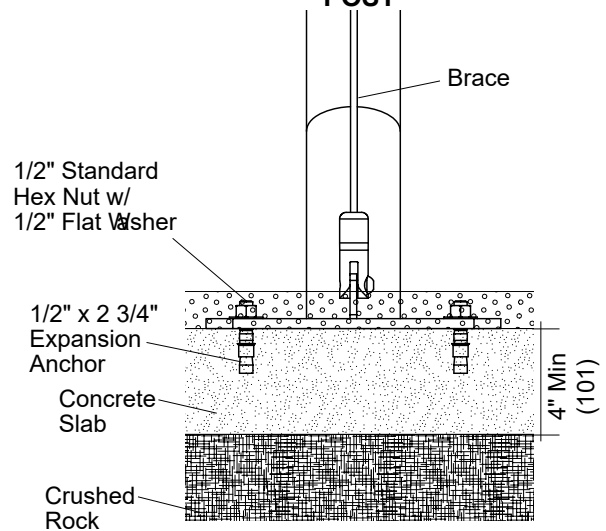
Choose a protective surfacing material that has a Critical Height Value of at least the height of the Highest Accessible Part/Fall Height of the adjacent equipment. (Ref. ASTM F1487.)



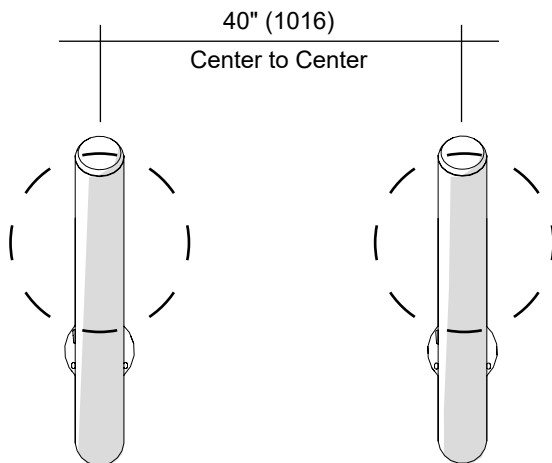
DETAIL DIRECT BURY



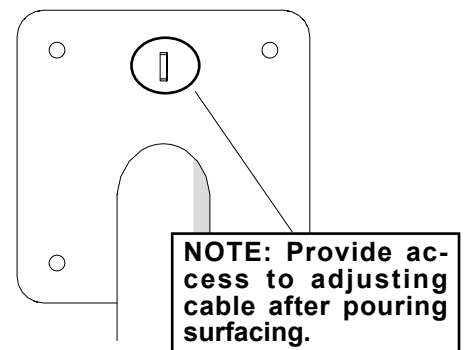
DETAIL SURFACE MOUNT POST



DETAIL Plan View

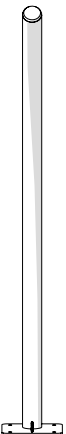
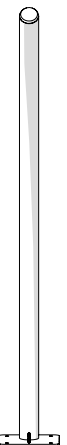
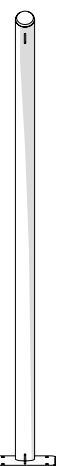
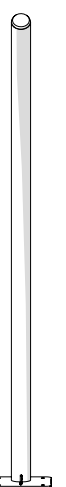
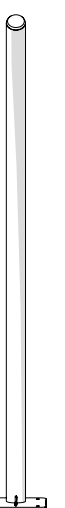
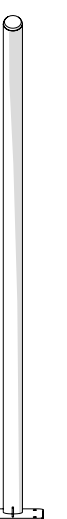




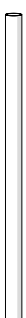















DETAIL SURFACE MOUNT

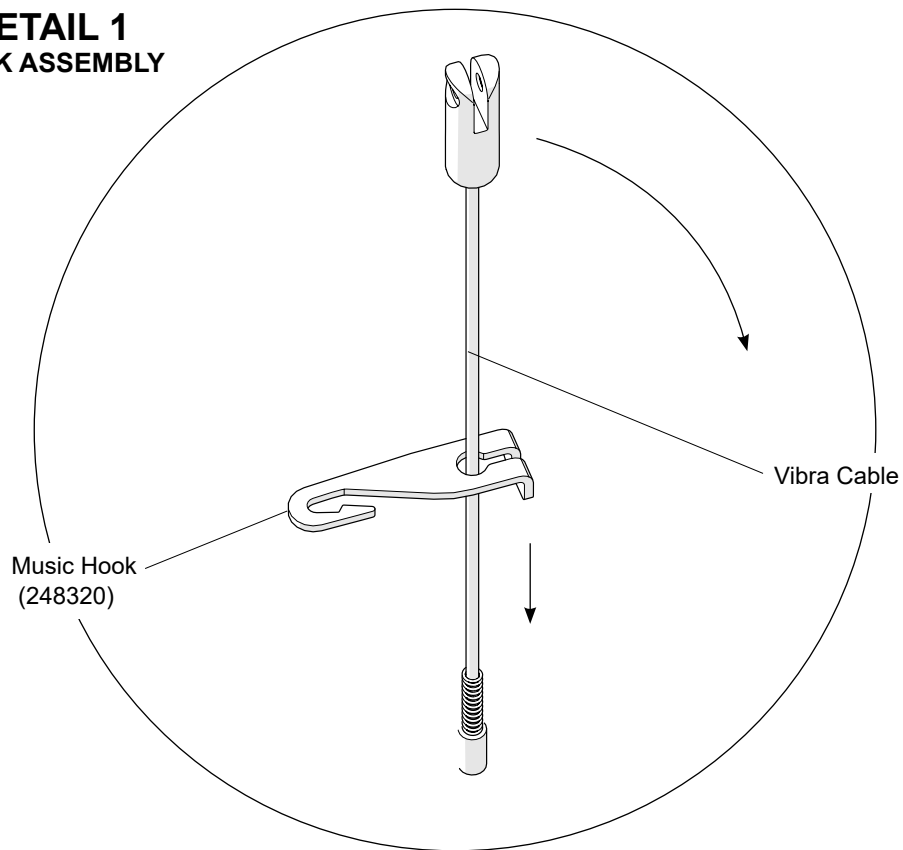


DETAIL

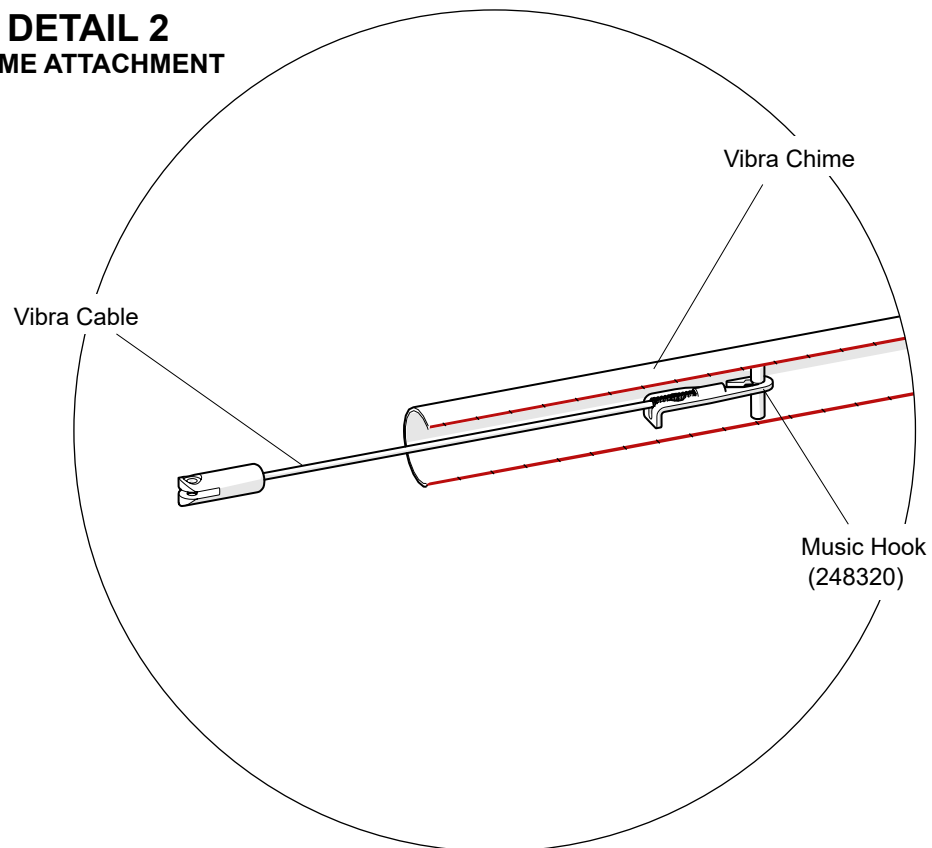
Vibra® Chime Assembly Pairings

	Vibra® Chime 8	Vibra® Chime 7	Vibra® Chime 6	Vibra® Chime 5	Vibra® Chime 4	Vibra® Chime 3	Vibra® Chime 2	Vibra® Chime 1
								
	DB 251267 SM 248369 78"(1982)	DB 251268 SM 248372 80"(2032)	DB 251269 SM 248373 83" (2108)	DB 251270 SM 248374 86.5" (2197)	DB 251271 SM 248375 90" (2286)	DB 251272 SM 248376 92" (2336)	DB 251273 SM 248377 96" (2438)	DB 251274 SM 248378 100.25" (2546)
Vibra Frames								
								
	245516 52.5" (1320)	245514 54" (1371)	245513 57" (1447)	245512 60.5" (1536)	245511 64" (1625)	245510 66" (1676)	245509 70" (1778)	245508 74" (1879)
Vibra Notes								
								
	248386 (2) 18 3/4" (476)	248385 (2) 19 1/4" (489)	248384 (2) 20" (508)	248383 (2) 20 3/4" (527)	248382 (2) 21 1/2" (546)	248381 (2) 22" (558)	248380 (2) 22 7/8" (581)	248379 (2) 23 3/4" (603)
Vibra Cables								

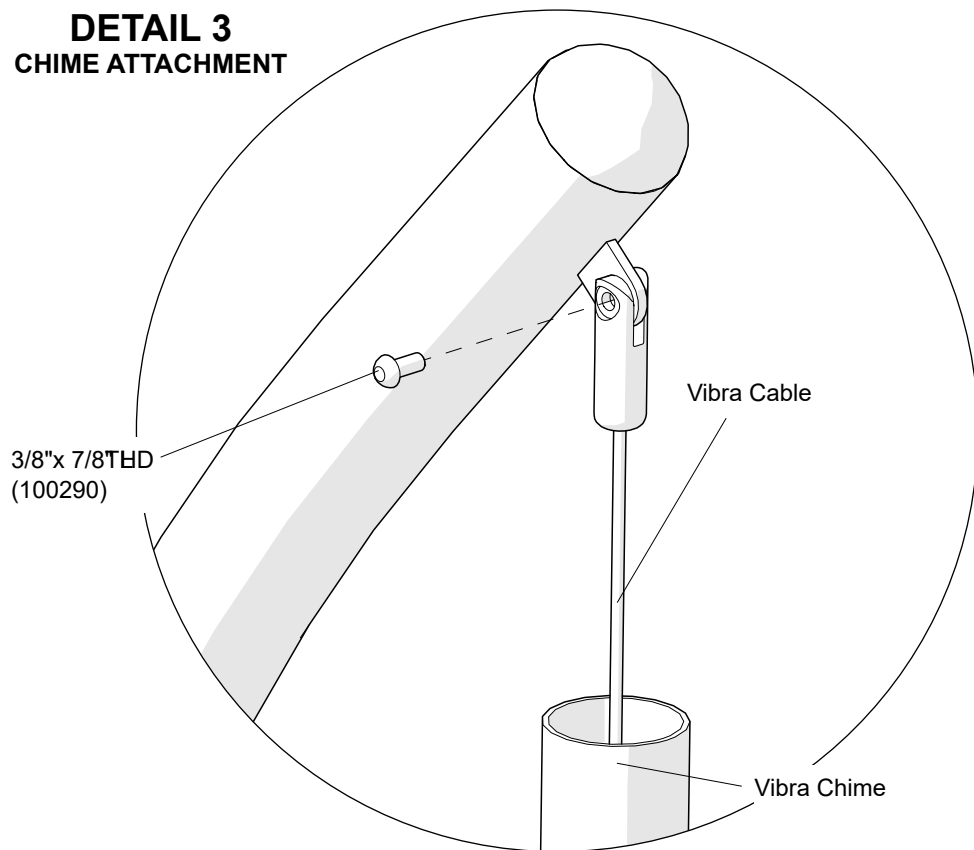
DETAIL 1 **HOOK ASSEMBLY**



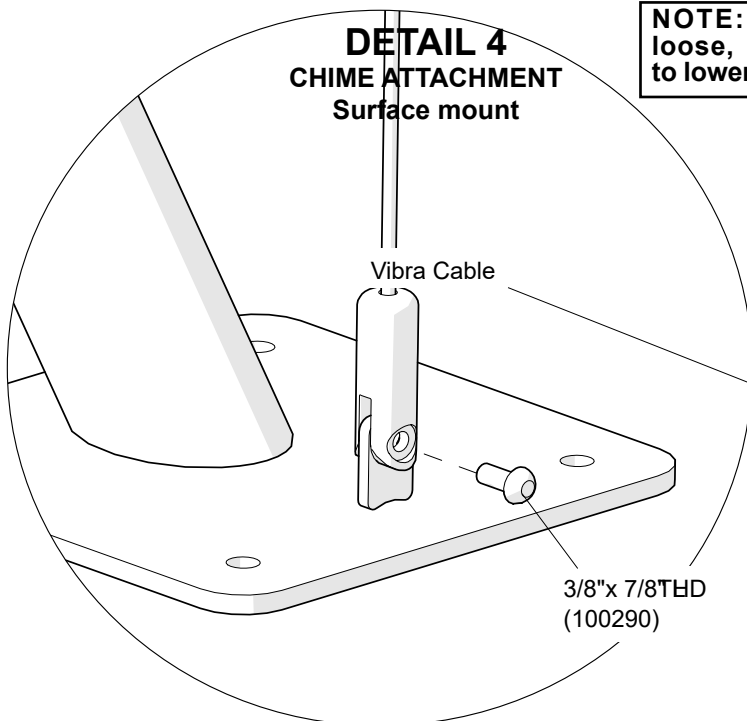
DETAIL 2 **CHIME ATTACHMENT**



DETAIL 3 CHIME ATTACHMENT

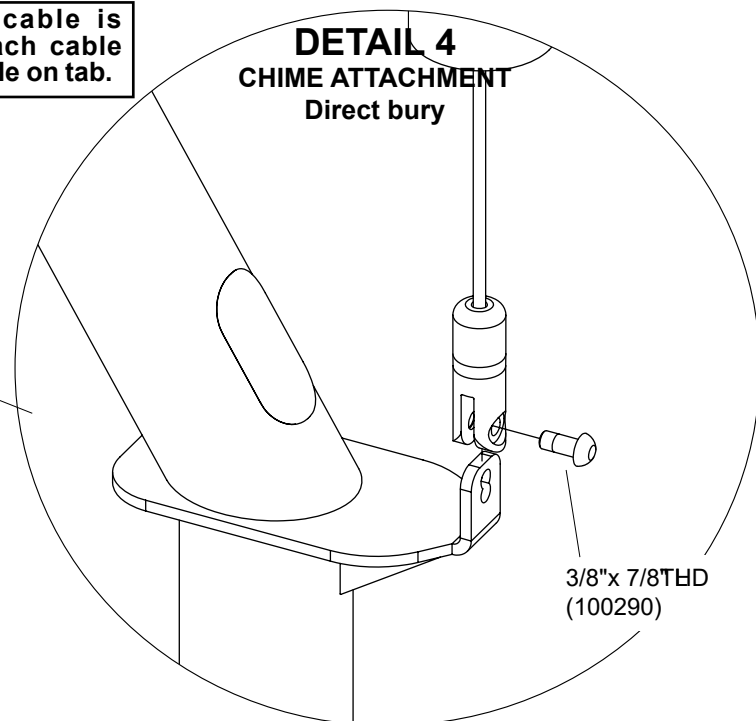


DETAIL 4 CHIME ATTACHMENT Surface mount

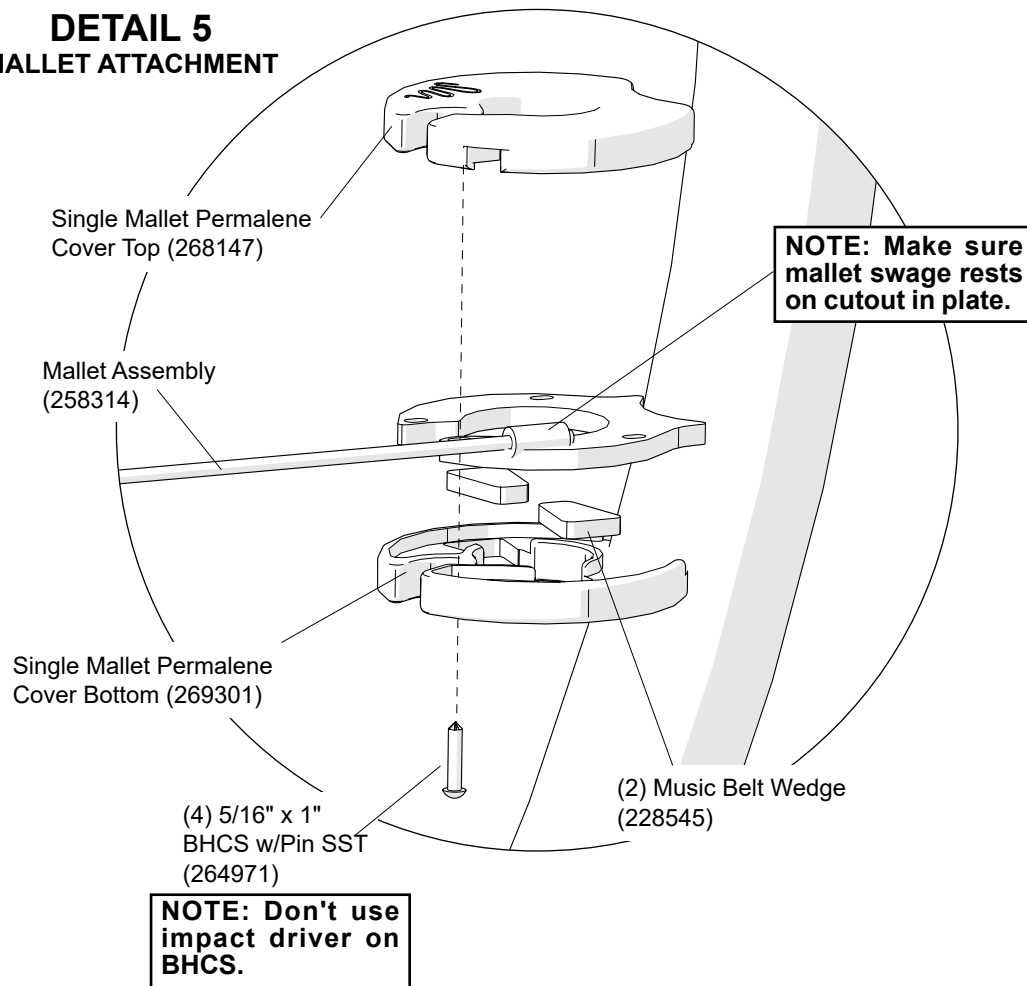


NOTE: If cable is loose, attach cable to lower hole on tab.

DETAIL 4 CHIME ATTACHMENT Direct bury



DETAIL 5 MALLET ATTACHMENT





Vibra Chimes™ Rhapsody®

Parts List - Vibra Chime 01

Part#	Description	Qty.
245508	Vibra Chime Tube Note Low C.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248379	Vibra Chime Tube Note Low C Cable.....	2
251274	Vibra Chime Frame DB 01, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248378	Vibra Chime Frame SM 01, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 02

Part#	Description	Qty.
245509	Vibra Chime Tube Note D.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248380	Vibra Chime Tube Note D Cable.....	2
251273	Vibra Chime Frame DB 02, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248377	Vibra Chime Frame SM 02, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 03

Part#	Description	Qty.
245510	Vibra Chime Tube Note E.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248381	Vibra Chime Tube Note E Cable.....	2
251272	Vibra Chime Frame DB 03, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248376	Vibra Chime Frame SM 03, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 04

Part#	Description	Qty.
245511	Vibra Chime Tube Note F.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248382	Vibra Chime Tube Note F Cable.....	2
251271	Vibra Chime Frame DB 04, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248375	Vibra Chime Frame SM 04, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 05

Part#	Description	Qty.
245512	Vibra Chime Tube Note G.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248374	Vibra Chime Frame SM 05, Specify Color.....	1
248383	Vibra Chime Tube Note G Cable.....	2
258314	Mallet Asm 55A Light Gray.....	1
251270	Vibra Chime Frame DB 05, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 06

Part#	Description	Qty.
245513	Vibra Chime Tube Note A.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248373	Vibra Chime Frame SM 06, Specify Color.....	1
248384	Vibra Chime Tube Note A Cable.....	2
258314	Mallet Asm 55A Light Gray.....	1
251269	Vibra Chime Frame DB 06, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 07

Part#	Description	Qty.
245514	Vibra Chime Tube Note B.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248372	Vibra Chime Frame SM 07, Specify Color.....	1
248385	Vibra Chime Tube Note B Cable.....	2
258314	Mallet Asm 55A Light Gray.....	1
251268	Vibra Chime Frame DB 07, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

Parts List - Vibra Chime 08

Part#	Description	Qty.
245516	Vibra Chime Tube Note C.....	1
268147	Single Mallet Perm Cover Top, Specify Color.....	1
269301	Single Mallet Perm Cover Bottom, Specify Color.....	1
248386	Vibra Chime Tube Note C Cable.....	2
251267	Vibra Chime Frame DB 08, Specify Color.....	1
258314	Mallet Asm 55A Light Gray.....	1
248369	Vibra Chime Frame SM 08, Specify Color.....	1
268171	Hdw Pkg Vibra™ Chime.....	1
100290	BHCS 6LP LTHD 3/8" 7/8"SST.....	2
264971	BHCS 6LP 5/16" 1", SST.....	4
248320	Music Hook Dipped, Grey.....	2
228545	Music Belt Wedge.....	2
127463	Bit Hex TPP T27 (Torx).....	1
121348	Hdw Pkg 4-Hole SM 1/2-13.....	1
100266	Exp Anchor 1/2" 2-3/4"ZP.....	4
100322	Nut Hex STD 1/2-13SST.....	4
100363	Washer Flat 1/2",SST.....	4

DB= Direct Bury
SM= Surface Mount



Vibra™ Chimes

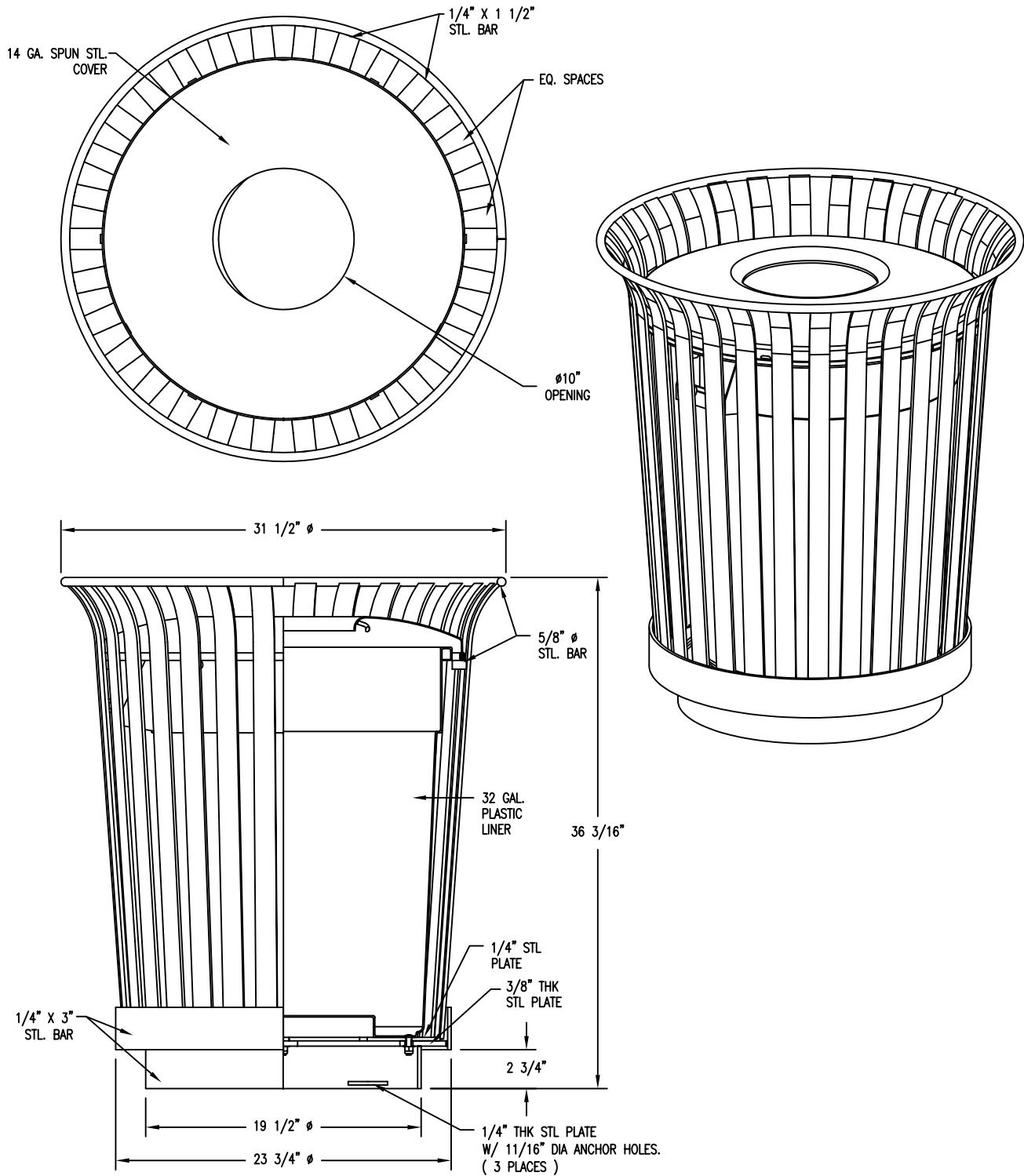
Rhapsody®

Specification

Tube:	Comprised of 3.000" (76,2 mm) O.D. x (.125") (3,17 mm) wall aluminum tubing, and 1/2" (12,7 mm) diameter aluminum rod.
Frame:	Weldment comprised of 3.500" (88,9 mm) O.D. RS20 (.125") (3,17 mm) wall galvanized steel tubing, 1/4" stainless steel sheet and 3/8" (9,50 mm) thick HRPO steel sheet. Finish: ProShield®, color specified
Mallet:	Comprised of 2" (50,8 mm) diameter light grey polyurethane, 1/2" (12,7 mm) diameter aluminum handle and 3/16" (4,74 mm) stainless steel cable with nylon coating.
Mallet Mount:	Permalene®, color specified
Cables:	Comprised of 3/16" (4,74 mm) diameter stainless steel cable with nylon coating.
Music Hook:	Fabricated from 7 GA. (.188") (4,77 mm) stainless steel. Finish: TenderTuff coated. Gray in color.
Fasteners:	Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications)
Installation Time:	Approx. 1 person hours per chime.
Weight:	Chime 8 - DB 47 lbs. Chime 8 - SM 59 lbs. Chime 7 - DB 48 lbs. Chime 7 - SM 60 lbs. Chime 6 - DB 50 lbs. Chime 6 - SM 62 lbs. Chime 5 - DB 51 lbs. Chime 5 - SM 63 lbs. Chime 4 - DB 53 lbs. Chime 4 - SM 65 lbs. Chime 3 - DB 54 lbs. Chime 3 - SM 66 lbs. Chime 2 - DB 56 lbs. Chime 2 - SM 68 lbs. Chime 1 - DB 58 lbs. Chime 1 - SM 70 lbs.
Concrete:	5.24 Cubic Feet DB

Installation Instructions

- 1) **(Direct Bury)** Dig footing holes. Refer to the PlanView & Direct Bury Details.
 - 2) Attach cable to hooks. Refer to Detail 1.
 - 3) Attach hook to chime. Refer to Detail 2.
 - 4) Attach to Chime Frame on top and bottom. Refer to Detail 3, 4.
 - 5) Attach mallet to frame. Refer to Detail 5.
-
- 1) **(Surface Mount)** With sign in proper position, using 1/2" masonry bit and hammer drill, drill 3" deep holes into concrete slab through holes in post plate. Tap 1/2"x 2 3/4" expansion anchors into holes and secure using 1/2" standard hex nuts with 1/2" flange washers.
 - 2) Attach cable to hooks. Refer to Detail 1.
 - 3) Attach hook to chime. Refer to Detail 2.
 - 4) Attach to Chime Frame on top and bottom. Refer to Detail 3, 4.
 - 5) Attach mallet to frame. Refer to Detail 5.
 - 6) Install protective surfacing before users are allowed to play with component.



NOTES:

- 1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
- 2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.
- 3.) RECEPTACLE FULLY ASSEMBLED AT FACTORY.

DuMor, inc.
P.O. Box 142 Mifflintown, PA 17059-0142

SCALE : NONE
DATE DRAWN : 12/12/96
DRAWN BY : AH
DATE REV. : 12/3/12
REV. BY : JSB

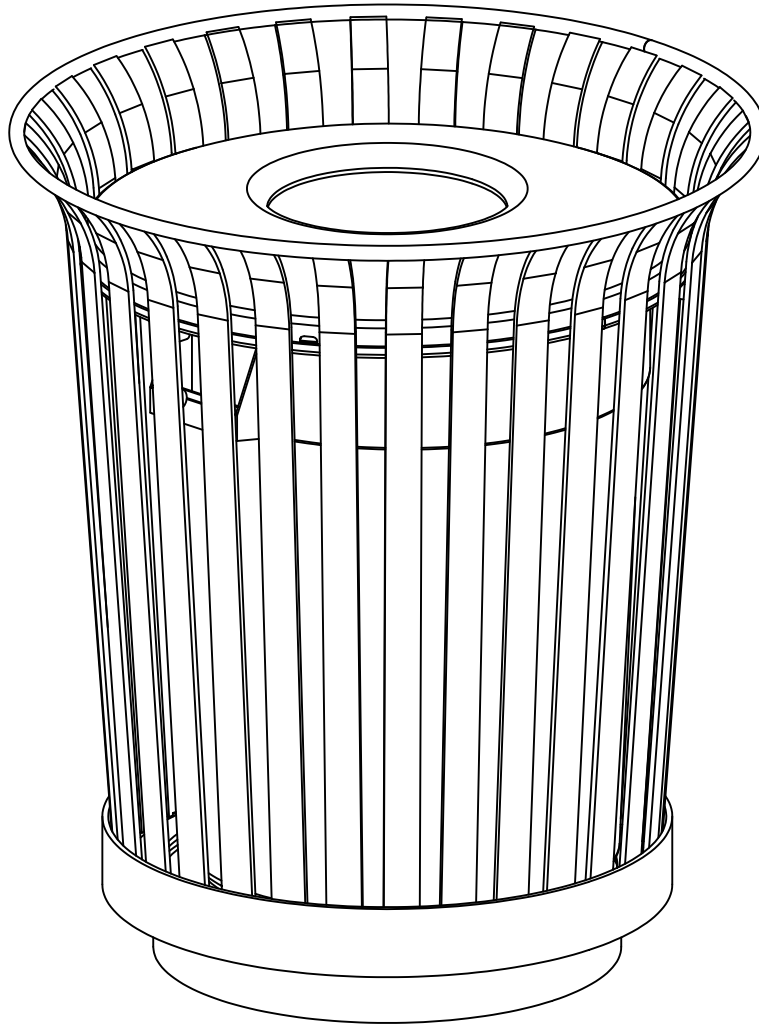
TITLE : RECEPTACLE

REV.
1

DRAWING
NUMBER

84-32-FT0

SHEET
1 OF 2



NOTE:

- 1.) RECEPTACLE SHIPPED FULLY ASSEMBLED.
- 2.) COVER ATTACHED W/ 1/8" VINYL COATED CABLE.
- 3.) MOUNT AND ANCHOR AS SPECIFIED.



DuMor, inc.

P.O. Box 142 Mifflintown, PA 17059-0142

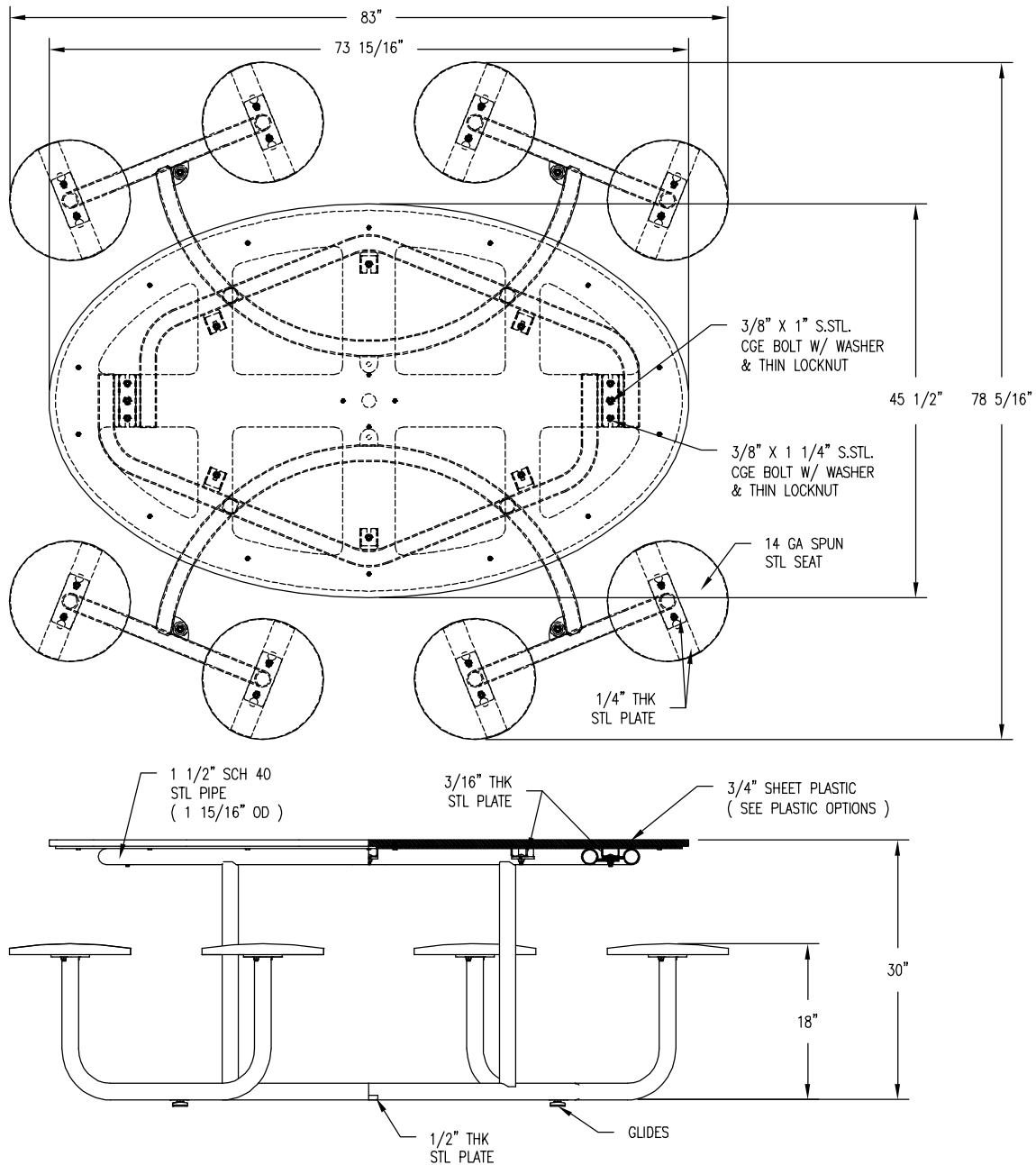
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REV. BY :	JSB

TITLE :	RECEPTACLE ASSEMBLY
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REV.	1
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DRAWING NUMBER	84-32-FT0
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SHEET	2 OF 2
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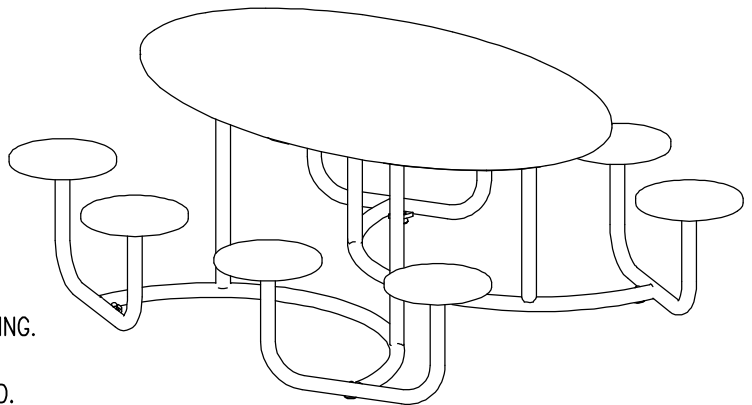



PLASTIC OPTIONS

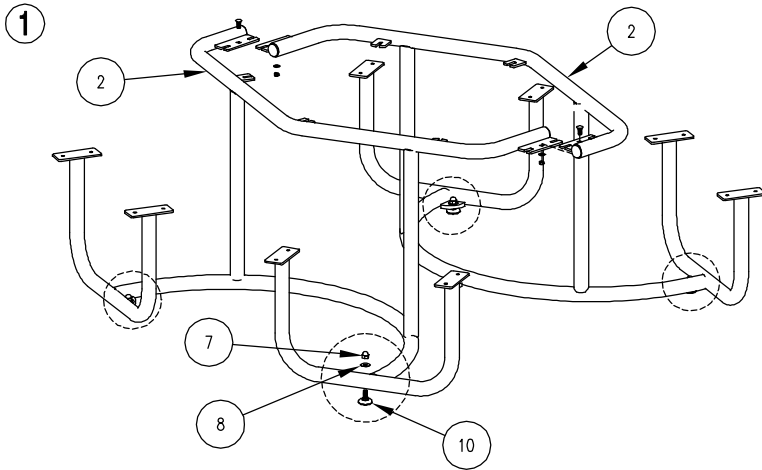
- ☐ "CEDAR" RECYCLED PLASTIC
- ☐ "GREY" RECYCLED PLASTIC
- ☐ "REDWOOD" RECYCLED PLASTIC
- ☐ "WALNUT" RECYCLED PLASTIC
- ☐ OTHER _____

NOTES:

- 1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
- 2.) 1/2" X 1" NYLON GLIDES & 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.



 DuMor, inc. P.O. Box 142 Mifflintown, PA 17059-0142		SCALE : NONE		TITLE : TABLE			
		DATE DRAWN : 9/24/10					
		DRAWN BY : JSB		REV. E	DRAWING NUMBER 198-80PL		SHEET 1 OF 2
		DATE REV. : 12/15/11					
REV. BY : RDH							



GLIDE ATTACHMENT

1A: ATTACH 1/2" X 1" GLIDES USING HARDWARE (7, 8, & 10).
TIGHTEN TO SNUG FIT. REPEAT UNTIL ALL GLIDES ARE ATTACHED
AT CIRCLED LOCATIONS.

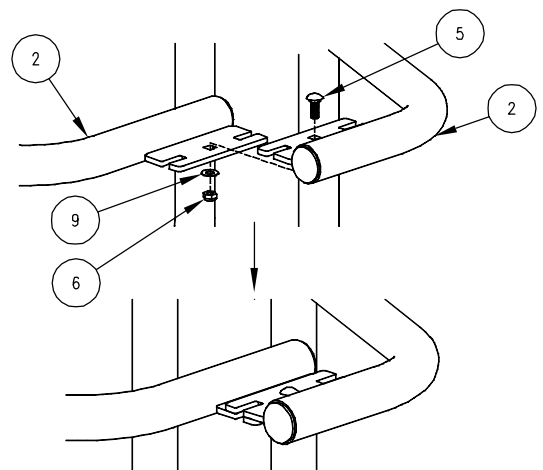
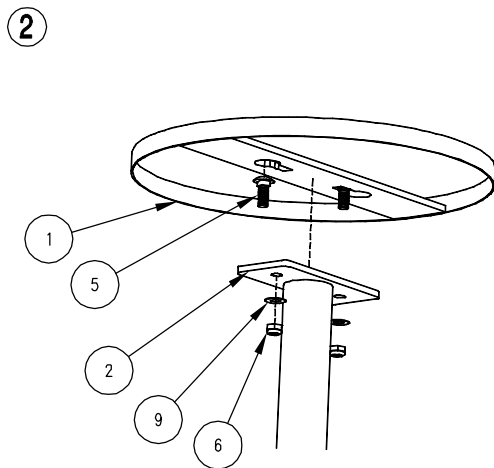


TABLE FRAME BOLTING DETAIL

1B: BOLT BOTH ENDS OF STL TABLE SUPPORT FRAME FOR 8 SEATS (2)
TOGETHER USING HARDWARE (5, 6, & 9). BE SURE TO PLACE THE
"TOP" BOLT PLATE (LABELED WITH "TOP" STICKER) OVER THE LOWER
BOLT PLATE ON EACH END OF SUPPORT FRAME (2). TIGHTEN TO SNUG FIT.



SEAT BOLTING

2A: ATTACH 14" DIA STL SEAT (1) TO STEP 1 ASSEMBLY USING
HARDWARE (5, 6, & 9). TIGHTEN TO SNUG FIT. REPEAT UNTIL ALL
14" DIA STL SEATS ARE ATTACHED.

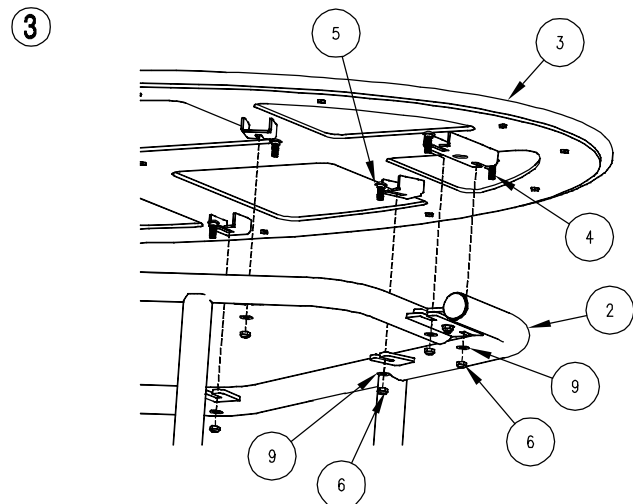


TABLE TOP BOLTING

3A: ATTACH PLASTIC TABLE TOP ASSEMBLY (3), TO TABLE SUPPORT FRAME (2)
USING HARDWARE (4, 5, 6, & 9). TIGHTEN TO SNUG FIT.

4

4A: UPON COMPLETION OF TABLE ASSEMBLY SQUARE ALL COMPONENTS THEN
TIGHTEN ALL HARDWARE.

NOTES:

1.) THE ACTUAL PARTS WILL NOT BE NUMBERED;
NUMBERS ONLY APPLY TO DRAWING.

ITEM	QTY	PART NO	DESCRIPTION
1	8	0-198-00-02	14" DIA STL SEAT
2	2	0-198-80-01	STL TABLE SUPPORT FRAME FOR 8 SEATS
3	1	0-198-80PL	OVAL TABLE TOP ASSEMBLY, PLASTIC
4	4	1-11-019	3/8" X 1 1/4" SS CGE BOLT
5	24	1-11-028	3/8" X 1" SS CGE BOLT

ITEM	QTY	PART NO	DESCRIPTION
6	28	1-20-019	3/8" SS THIN NYLON LOCKNUT
7	4	1-21-019	1/2" SS HEX ACORN NUT
8	4	1-22-015	1/2" SS FLAT WASHER
9	28	1-22-024	3/8" SS FLAT WASHER
10	4	5-48-096	1/2" X 1" SWIVEL GLIDE

DuMor, inc.
P.O. Box 142 Mifflintown, PA 17059-0142

SCALE : NONE
DATE DRAWN : 9/24/10
DRAWN BY : JSB
DATE REV. : 12/15/11
REV. BY : RDH

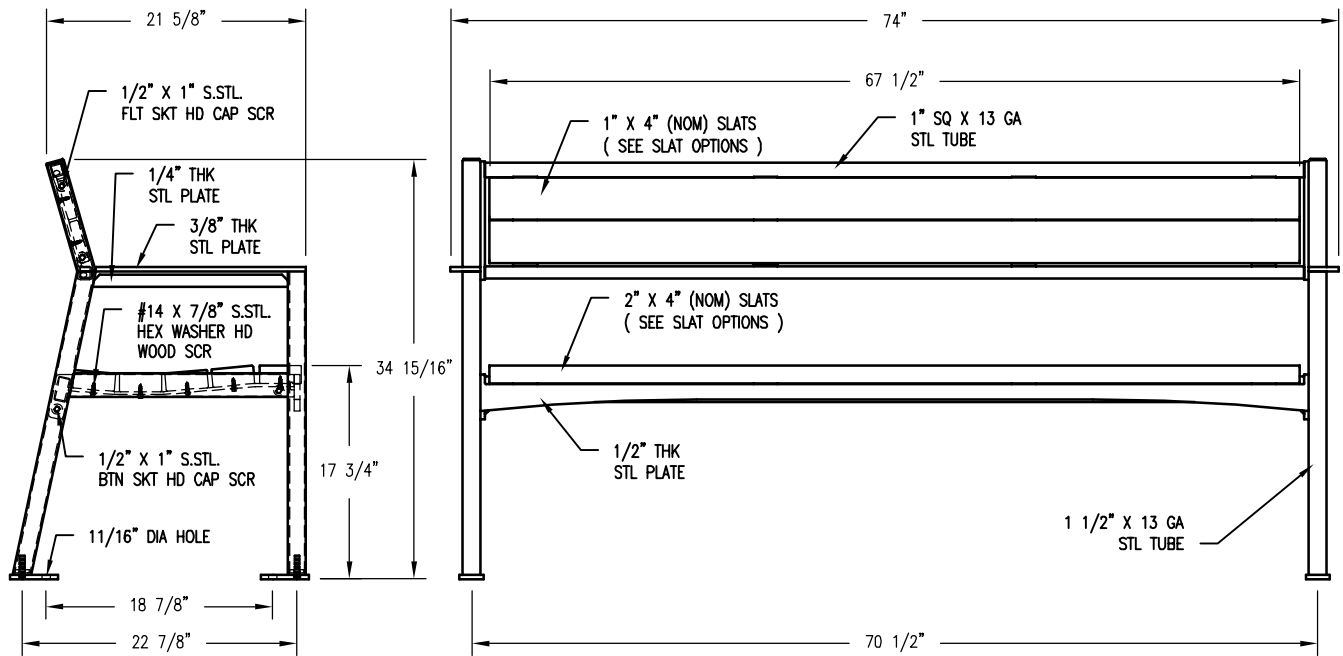
TITLE : TABLE DETAIL

REV.
E

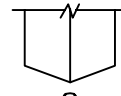
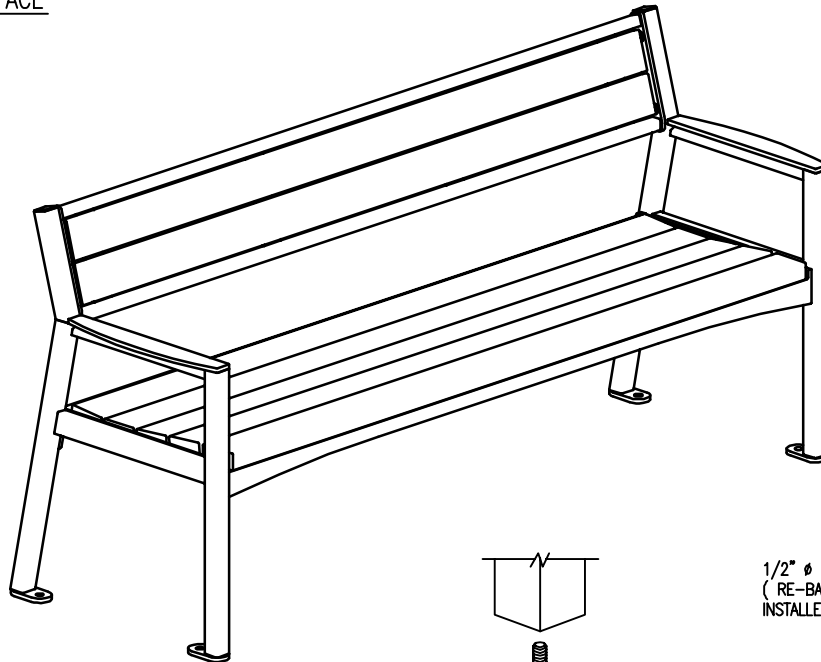
DRAWING
NUMBER

198-80PL

SHEET
2 OF 2



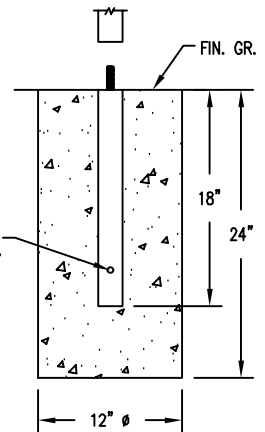
☐ S-2 SURFACE



NYLON PAD

☐ S-5 FREE STANDING

1/2" Ø HOLE
(RE-BAR BY
INSTALLER)



☐ S-1 EMBEDMENT

NOTES:

- 1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
- 2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED FOR S-2.

SLAT OPTIONS

- ☐ ANTIQUE MAHOGANY TEXTURED
- ☐ BRAZILIAN WALNUT TEXTURED
- ☐ OTHER _____

NOTES:

- 1.) DURING ASSEMBLY PROCEDURE;
DO NOT COMPLETELY TIGHTEN HARDWARE.
- 2.) THE ACTUAL PARTS WILL NOT BE NUMBERED.
NUMBERS ONLY APPLY TO DRAWING.
- 3.) UPON COMPLETION OF ASSEMBLY SQUARE
ALL COMPONENTS THEN TIGHTEN ALL HARDWARE.
- 4.) MOUNT AND ANCHOR AS SPECIFIED.

TOOLS REQ'D

3/4" WRENCH
5/16" NUT DRIVER OR FLAT HEAD DRILL BIT
5/16" ALLEN WRENCH
1/2" MASONRY DRILL BIT
DRILL

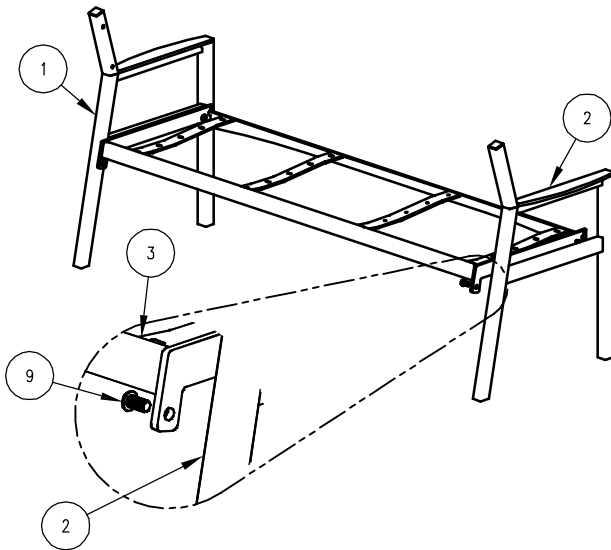
PARTS LIST

ITEM	QTY	PART NO	DESCRIPTION
1	1	0-500-00-01L	STL END SUPPORT - LEFT
2	1	0-500-00-01R	STL END SUPPORT - RIGHT
3	1	0-500-60-02	6' STL SEAT
4	1	0-500-60-03	6' STL BACKREST
5	2	0-500-60TX-04	1" X 4" X 67 1/2" SLAT, TX
6	5	0-500-60TX-05	2" X 4" X 67 1/2" SLAT, TX
7	4	0-502-00-06/S-2	SURFACE MOUNT FOOT PAD
8	4	1-12-014	1/2" X 1" SS FLT SKT HD CAP SCR
9	4	1-12-056	1/2" X 1" SS BTN SKT HD CAP SCR
10	28	1-16-023	#14 X 7/8 SS HX WASH HD 'A' SLTD WD SCREW

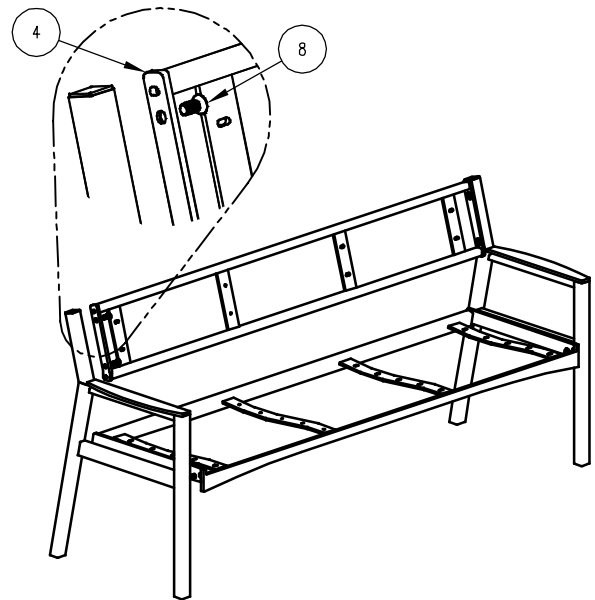
KITS PROVIDED

ITEM	QTY	PART NO	DESCRIPTION
11	1	K-ANCO860-4	1/2" X 3 3/4" SS ANCHOR KIT (4PC)
12	1	K-BC0816-4	1/2" CAP HARDWARE KIT (4PC)
13	1	K-FC0816-4	1/2" CAP HARDWARE KIT (4 PCS)
14	1	K-WS1414-30	#14 HEX HD WASH WOOD SCR (30PC)

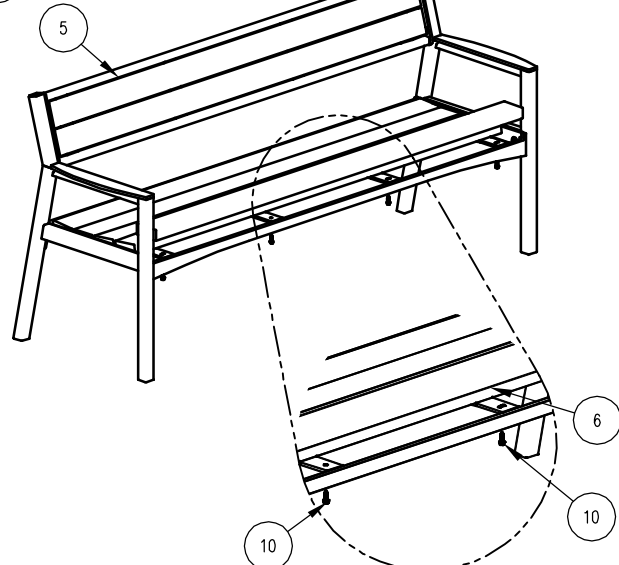
1 ATTACH SEAT TO END SUPPORTS.



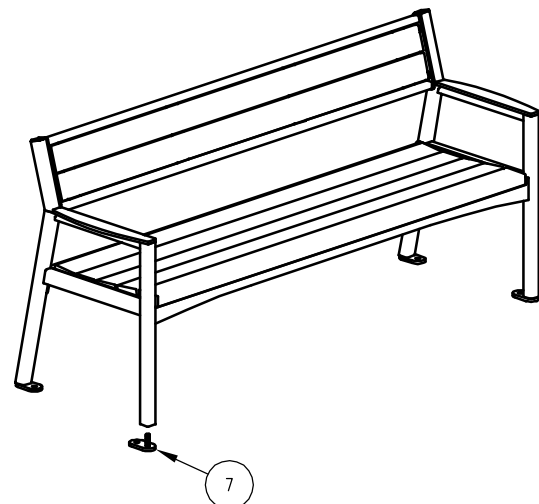
2 ATTACH BACK TO STEP 1.



3 ATTACH SLATS TO STEP 2.



4 ATTACH SURFACE MOUNT FOUR PAD TO STEP 3.





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Hoop Rack Heavy Duty



For added security and peace of mind, the Heavy Duty Hoop Rack uses a larger, thicker pipe than our standard Hoop Rack. The Heavy Duty Hoop meets APBP guidelines for u-lock compatibility and two points of support for the bike.

Hoop Rack Heavy Duty



YOUR **LOGO** HERE

Customize the HoopRack Heavy Duty to brand your bike parking!



FINISH OPTIONS

Galvanized



Stainless

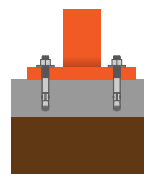


Powder Coat



MOUNT OPTIONS

Surface

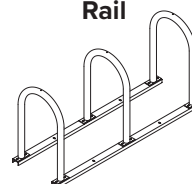


In-Ground



Tamper-resistant fasteners available upon request

Rail



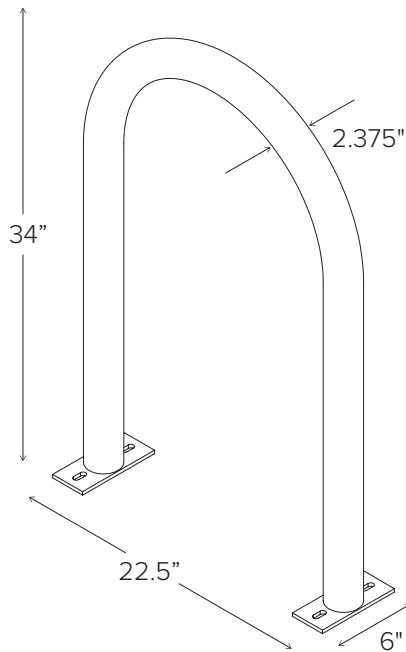
**OPTIONAL
LEAN BAR**



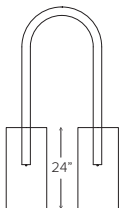
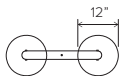
DERO
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Hoop Rack Heavy Duty

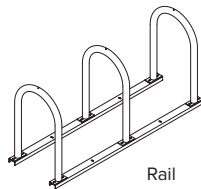
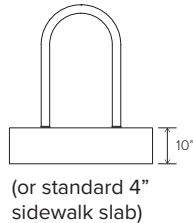
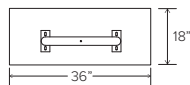
Submittal Sheet



IN-GROUND MOUNT



SURFACE MOUNT



Rail

CAPACITY

2 Bikes

MATERIALS

2" schedule 40 pipe (2.375" OD)

FINISHES



Galvanized

An after fabrication hot dipped galvanized finish is our standard option.



Powder Coat

Our powder coat finish assures a high level of adhesion and durability by following these steps:

1. Sandblast
2. Epoxy primer electrostatically applied
3. Final thick TGIC polyester powder coat



Stainless

Stainless Steel: 304 grade stainless steel material finished in either a high polished shine or a satin finish.

MOUNT OPTIONS



Surface

Foot Mount has two 2.5" x 6" x .25" feet with two anchors per foot. Specify foot mount for this option. Tamper-resistant fasteners available upon request.



In-Ground

In-ground mount is embedded into concrete base. Specify in-ground mount for this option.



Rail

Rail Mounted Downtown Racks are bolted to two parallel rails which can be left freestanding or anchored to the ground. Rails are heavy duty 3" x 1.4" x 3/16" thick galvanized mounting rails. Specify rail mount for this option.

Rack Angle:



90



45A



45B



60A

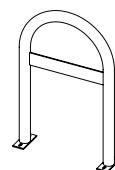


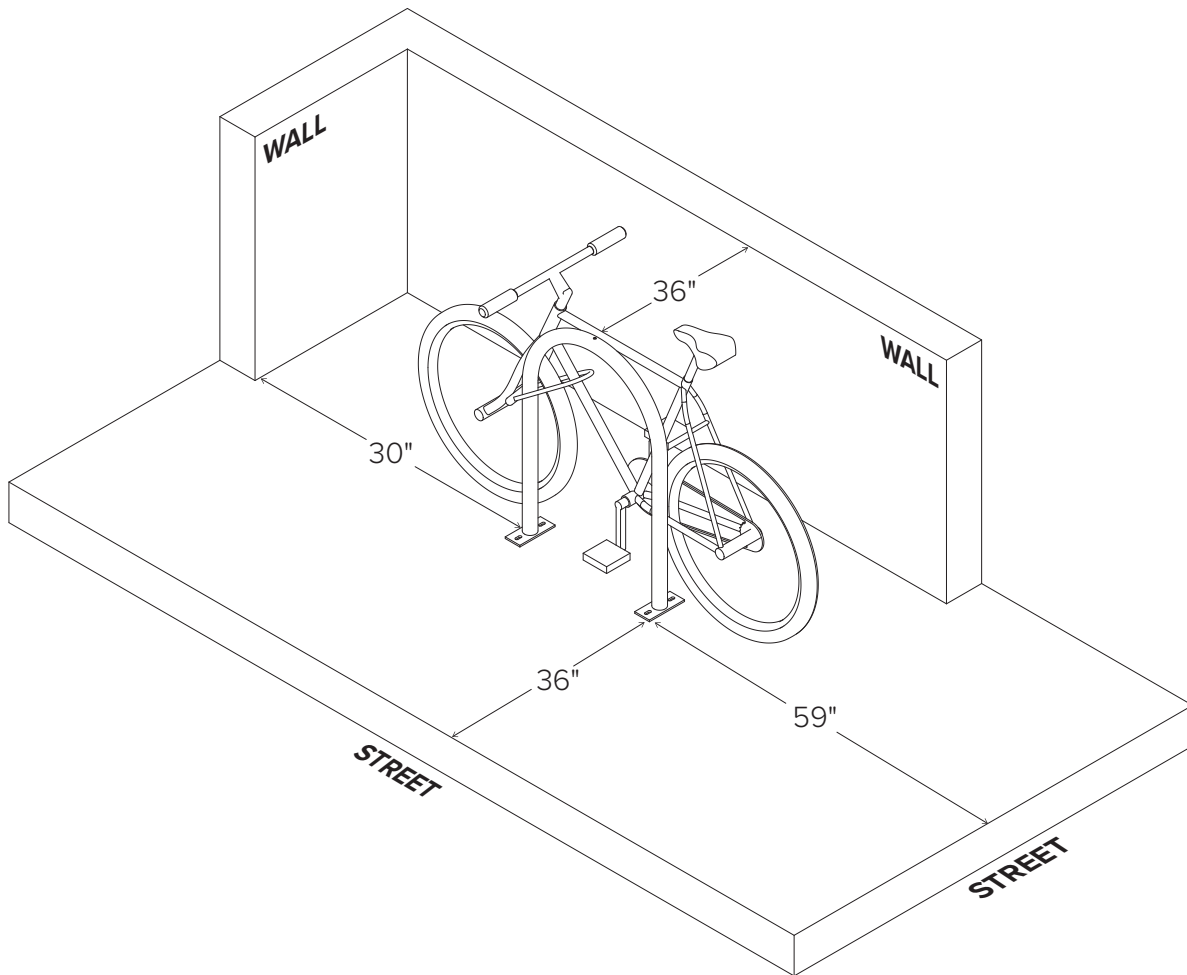
60B

OPTIONAL LEAN BAR

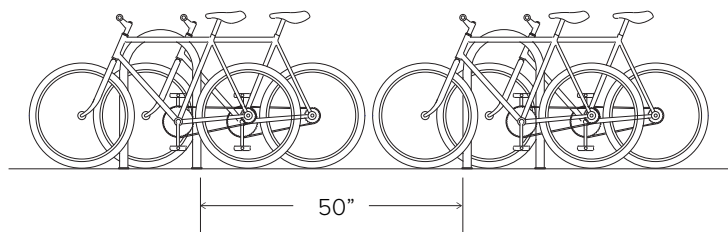


Add Lean Bar

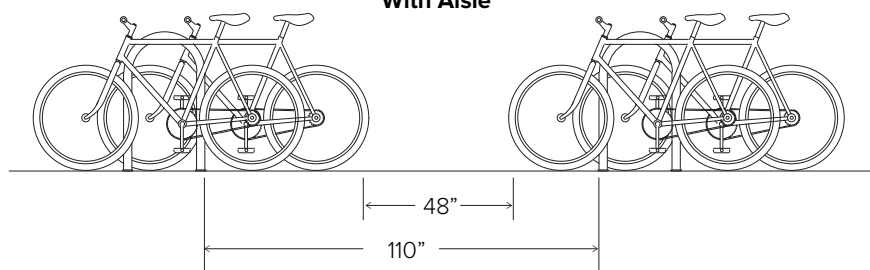




No Aisle



With Aisle





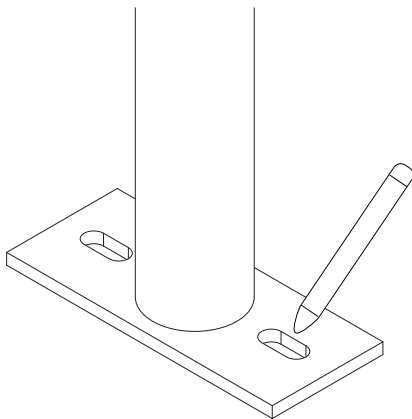
TOOLS NEEDED

Tape Measure
 Marker or Pencil
 Masonry Drill Bit
 Drill (Hammer drill recommended)
 Hammer
 Wrench 9/16"
 Level

RECOMMENDED BASE MATERIAL

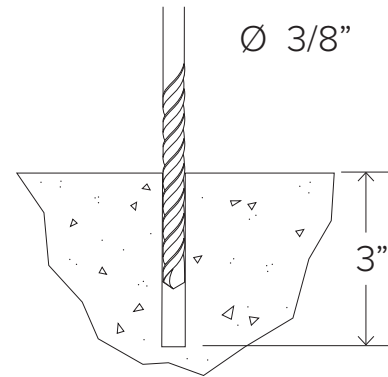
Solid concrete is the best base material for installation. To ensure the proper anchors are shipped with your rack, ask your Dero Rack representative which anchor is appropriate for your application. Be sure nothing is underneath the base material that could be damaged by drilling.

1



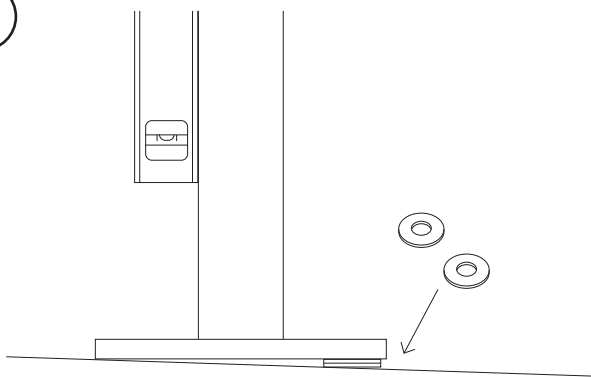
Place the rack in the desired location. Use a marker or pencil to outline the holes of the flange onto the base material.

2



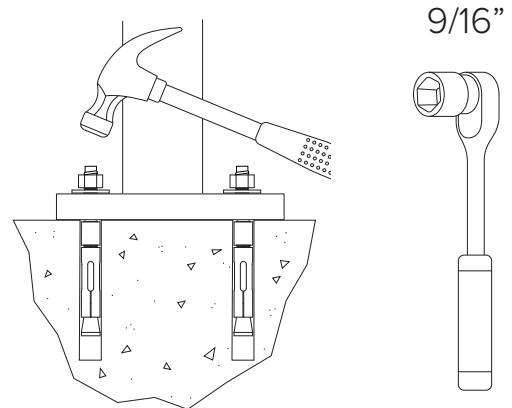
Drill 3/8" diameter holes 3" deep into surface. Make sure the holes are at least 3" away from any cracks in the base material.

3



Place rack (and washers to level rack if necessary) over holes.

4

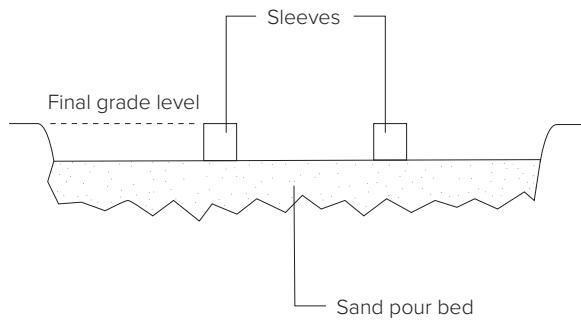


Thread nuts onto anchors, leaving approximately 1/4" of the anchor protruding, and tap into surface. Tighten nuts down to secure rack.

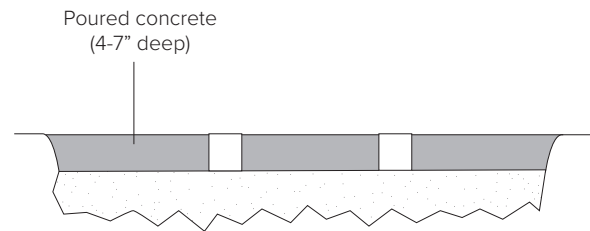

TOOLS NEEDED

Level
 Cement mixing tub
 Shovel

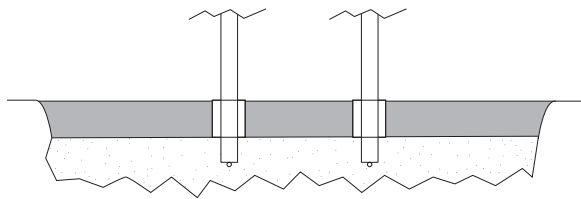
Trowel
 Corrosion-Resistant Sleeve (min. 3" diameter)
 Materials to build brace (see "Install Tip" at bottom of page)

1


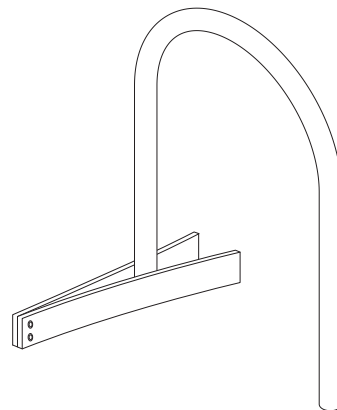
Place corrosion resistant sleeve (min. 3" inside diameter) in sand pour bed in exact location where rack will be installed. Make sure top of sleeve is at same level as desired finished concrete surface. Fill sleeve with sand to keep it in place and prevent it from filling with concrete.

2


Pour concrete and allow to cure.

3


After appropriate cure time, dig out sand from sleeves and insert rack, making sure it is level and at the appropriate height. Pour in Super Por-Rok or epoxy grout and allow to set.

TIP


An easy way to brace the rack while the grout sets is to bolt two 1x4" boards together at one end and clamp them onto the legs of the rack like a clothes pin.



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Hoop Rack Heavy Duty

Installation In-Ground Mount : Existing Concrete

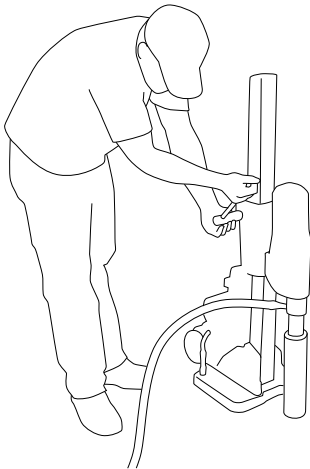


TOOLS NEEDED

Level
Cement mixing tub
Shovel
Access to water hose

Trowel
Hole coring machine with 4" bit
Materials to build brace (see "Install Tip" at bottom of page)

1

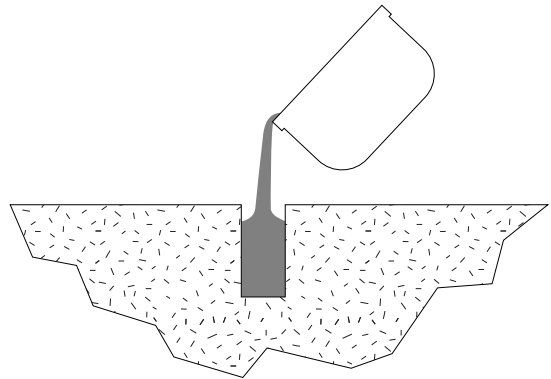


Ø 3" min.

↓ 10" min.

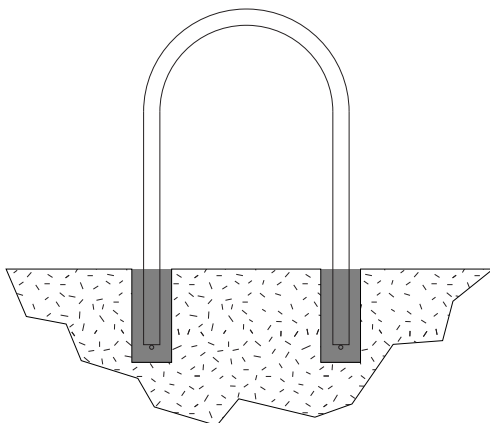
Core holes no less than 3" diameter (4" recommended) and no less than 10" deep into sidewalk.

2



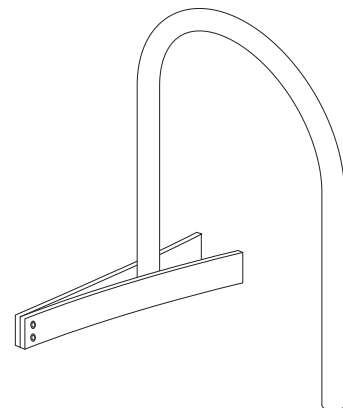
Fill holes with Super Por-Rok or epoxy grout.

3



Place rack into holes, making sure it is level until the grout has set. 33"-36" of the rack should remain above the surface.

TIP



An easy way to brace the rack while the grout sets is to bolt two 1x4" boards together at one end and clamp them onto the legs of the rack like a clothes pin.

RAIL MOUNTED RACKS

Rail mounted racks are standard foot mounted racks attached with bolts to a rail as in the diagram at left. Rail mounted racks provide more flexibility than other mounting options while providing the same degree of security.

Rail mounted racks can be left freestanding, or they can be anchored to the ground using several anchors. This option allows for easier snow removal and sweeping. Installation of rail mounted racks is also much less expensive than embedding the racks into the ground.

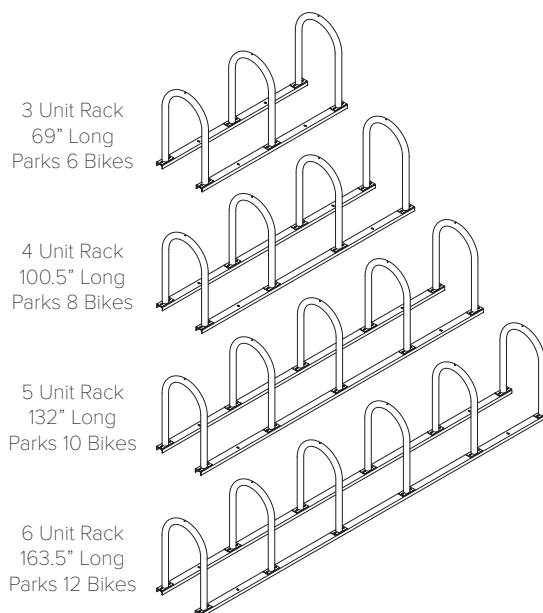
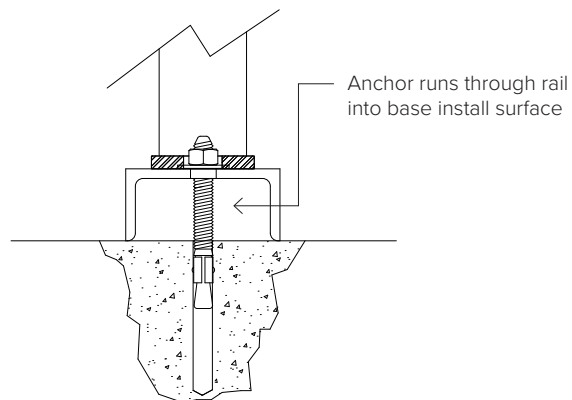
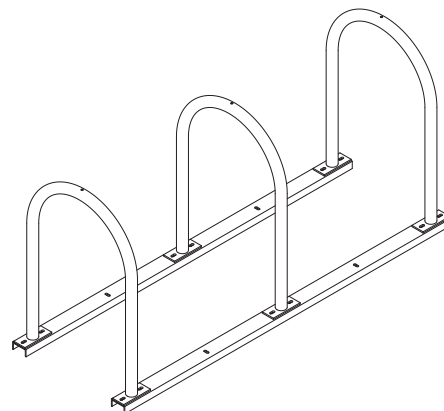
* Note: Though racks may be painted, the rails will remain with only a galvanized finish

ADVANTAGES:

- Easier and inexpensive installation
- Can be left freestanding or anchored to the ground
- Easier to remove for sweeping and snow removal

APPLICATIONS:

- Installation to pavers
- Asphalt Installations
- Ground, dirt, or mulch
- Situations where the rack needs to be moved occasionally





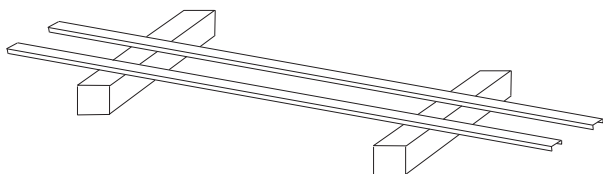
TOOLS NEEDED

9/16" Socket set
 Two 4" x 4" x 28" (or larger) blocks
 4 bolts, nuts and washers for every rack
 (included). If using a tamper resistant nuts,
 install two tamper resistant nuts with each rack.

ANCHORING THE RAILS

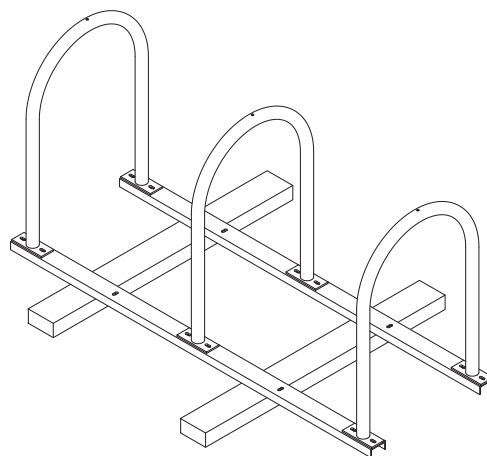
To anchor the rails to concrete, place 3.75" wedge anchor through holes in the rail into the concrete. Secure with nut.

1



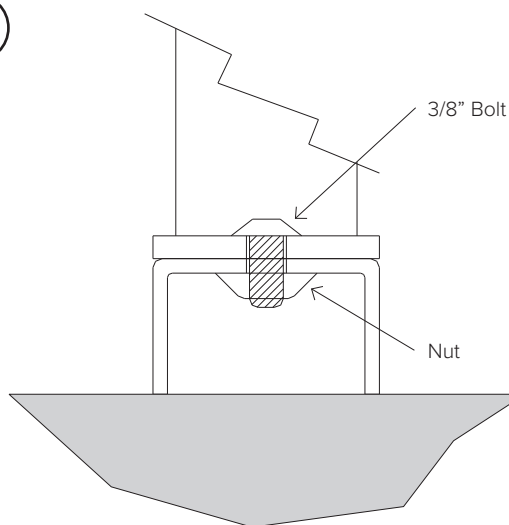
Lay out the two channel beams where the rack will be placed. Place the two beams on top of the two blocks of wood so that the open part of the channel faces the ground.

2



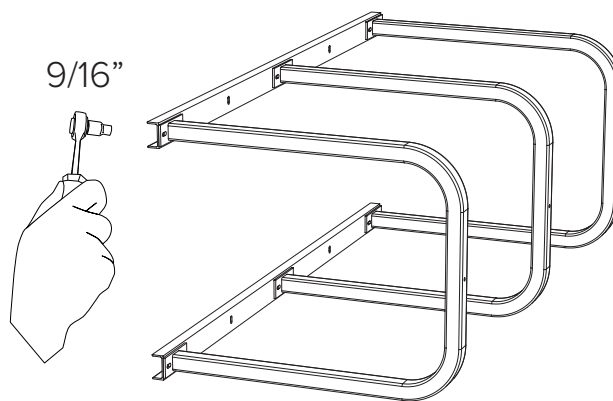
Place racks on beams so holes in rack flanges line up with beam slots

3



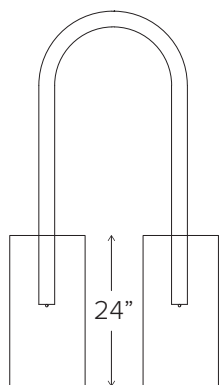
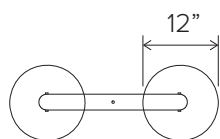
Put bolts through rack flange holes and beams so bolt head faces up. **HAND** tighten the nuts using new flange nuts.

4

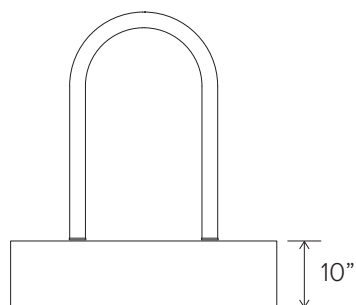
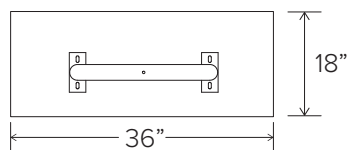


Once nuts are on, tip assembled rack over and use a 9/16" socket to tighten nuts. Before fully tightening nuts, make sure the racks are straight on beams. If using tamper resistant nuts, use access tool to tighten nuts. Do not overtighten the tamper resistant nuts. Tip rack upright.

IN-GROUND MOUNT



SURFACE MOUNT



(or standard 4" sidewalk slab)



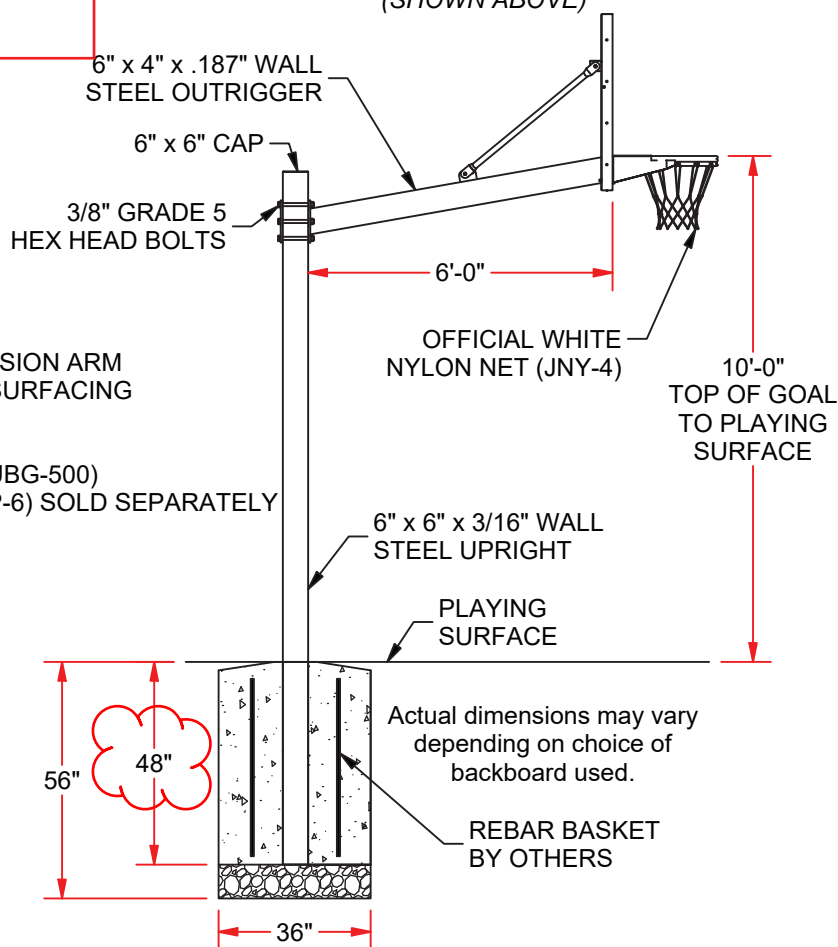
SQUARE POST OUTDOOR BASKETBALL w/ 6 FT DIRECT MOUNT



770-AC-UG
(SHOWN ABOVE)
(2) Standard Height



660-AC-UG
(SHOWN ABOVE)



FEATURES:

- > 6" SQUARE STEEL UPRIGHT w/ ANGLED EXTENSION ARM
- > HEIGHT CAN BE ADJUSTED AFTER COURT RESURFACING
- > GALVANIZED COAT FINISH FOR 660
- > BLACK POWDER COAT FINISH FOR 770
- > HEAVY DUTY GOAL & NYLON NET INCLUDED (UBG-500)
- > BOLT-ON BACKBOARD EDGE PADDING (MBBP-6) SOLD SEPARATELY
- > ALL BACKBOARDS 72" x 42"

GALVANIZED POST:

- > ACRYLIC BACKBOARD (660-AC-UG)
- > STEEL BACKBOARD (660-RS-UG)
- > PERFORATED STEEL BACKBOARD (660-PF-UG)

BLACK POWDER COAT POST:

- > ACRYLIC BACKBOARD (770-AC-UG)
- > STEEL BACKBOARD (770-RS-UG)
- > PERFORATED STEEL BACKBOARD (770-PF-UG)

Concrete footing to be 5'
deep 3 (extends 6" beyond
post depth)



660 / 770 Total of 2

SQUARE POST OUTDOOR BASKETBALL
w/ 6 FT DIRECT MOUNT

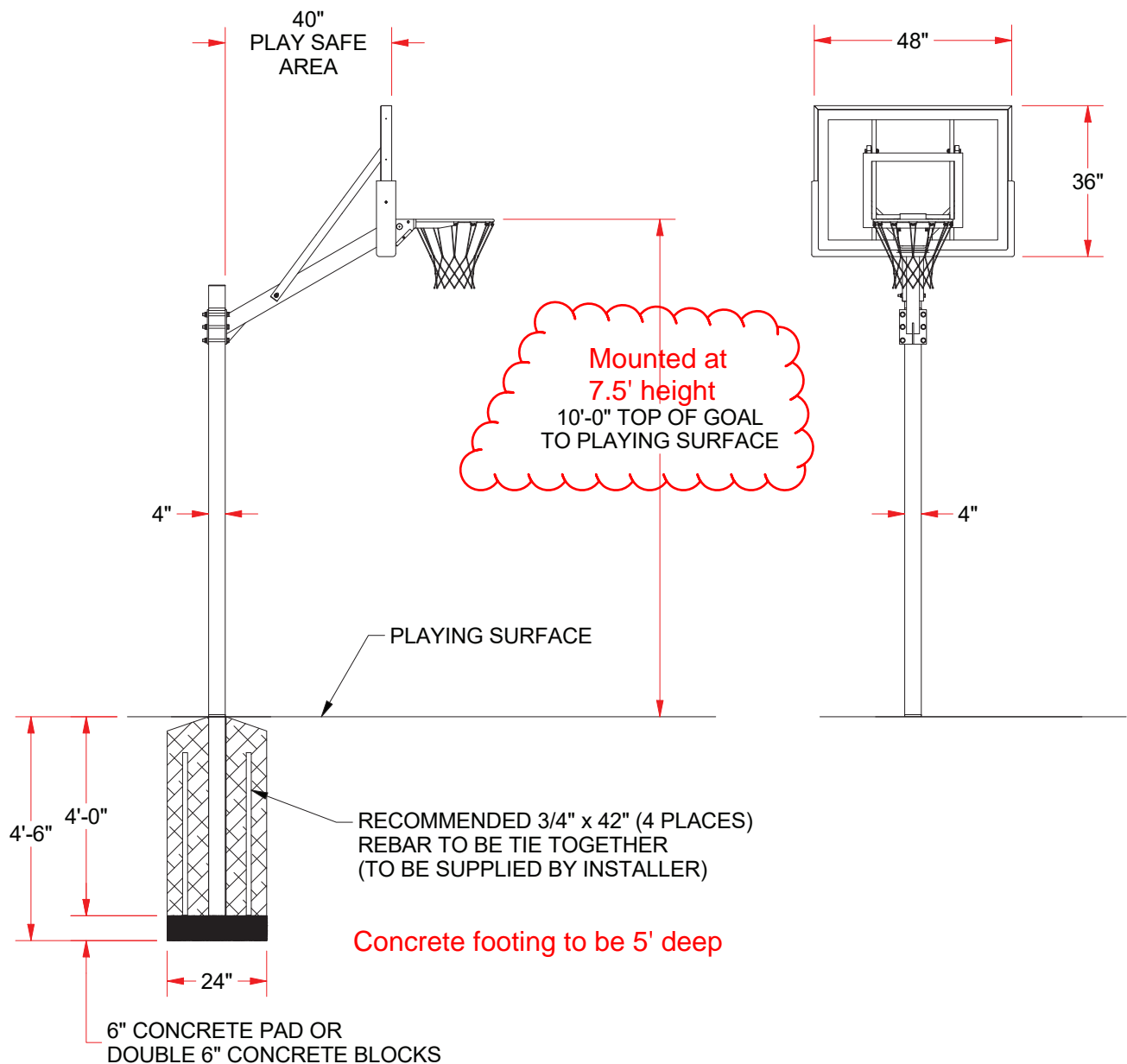
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www.jaypro.com
(800) 243-0533
976 Hartford Turnpike
Waterford, CT 06385 USA

Sheet 1 of 1



400-AC-FG THE CHURCH YARD W/ACRYLIC BOARD



FEATURES:

- > FIXED HEIGHT UNIT BURIES 48" INTO GROUND
- > HEIGHT CAN BE ADJUSTED AFTER COURT RESURFACING OR FOR KIDS PLAY.
- > 4" SQUARE STEEL UPRIGHT AND ANGLED EXTENSION ARM
- > 40" EXTENSION ARM FOR "PLAY SAFE AREA"
- > HEAVY-DUTY FLEX GOAL AND NYLON NET INCLUDED
- > POST PADDING AND BACKBOARD EDGE PADDING INCLUDED
- > ACRYLIC BACKBOARD: 48" x 36"

(1) Youth Height



400-AC-FG

THE CHURCH YARD W/ACRYLIC BOARD

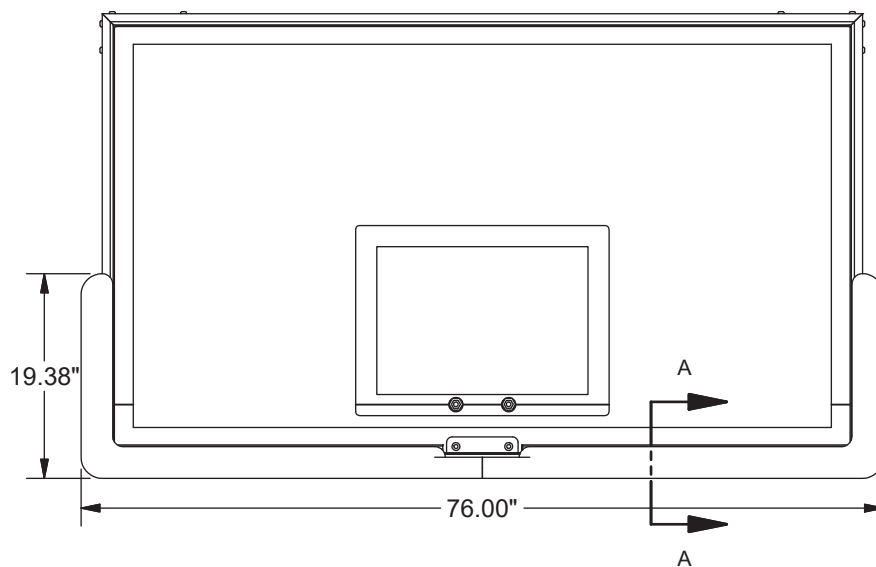
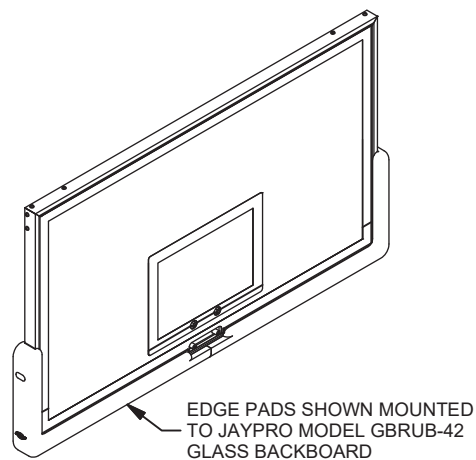
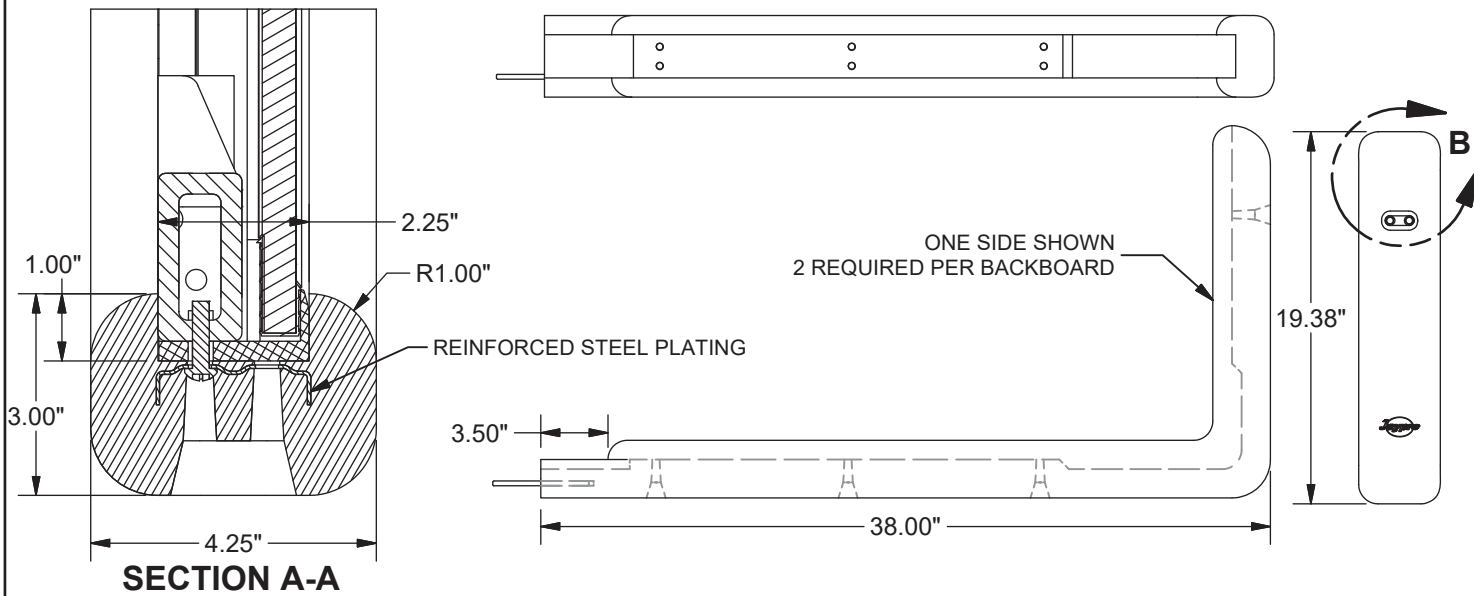
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Sheet 1 of 1



MBBP-6 Safe-Pro™ EDGE PADDING



16 AVAILABLE COLORS:

- | | | | |
|--|---|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Royal Blue | <input checked="" type="checkbox"/> Black | <input type="checkbox"/> Scarlet | <input type="checkbox"/> Old Gold |
| <input type="checkbox"/> Navy Blue | <input type="checkbox"/> Purple | <input type="checkbox"/> Cardinal | <input type="checkbox"/> Yellow |
| <input type="checkbox"/> Columbia Blue | <input type="checkbox"/> Light Purple | <input type="checkbox"/> Burnt Orange | <input type="checkbox"/> Kelly Green |
| <input type="checkbox"/> Gray | <input type="checkbox"/> Maroon | <input type="checkbox"/> Orange | <input type="checkbox"/> Forest Green |

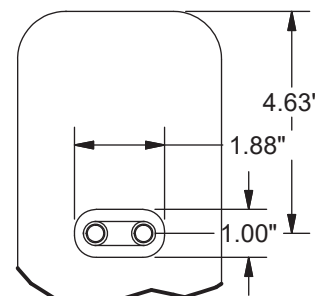
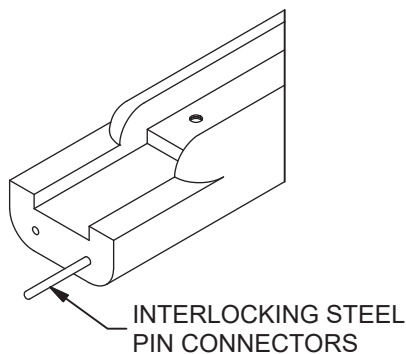
PROJECT NAME _____

PROJECT NUMBER _____

ARCHITECT _____

CONTRACTOR _____

NOTES _____



DETAIL B



MBBP-6

Safe-Pro™ Edge Padding

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Sheet 1 of 2



SPECIFICATION SHEET

The Safe-Pro™ MBBP-6 edge padding shall meet all requirements / recommendations of the NCAA, NFSHSA, WNBA, and NBA. The padding shall cover the bottom surface of the board and the side surface to a distance of 17-3/8" and be not less than 2" thick. The front and back surface shall be covered to a minimum distance of 3/4" up from the bottom and be not less than 1" in thickness. The padding shall be 1" thick from the front and back surface of the backboard.

Competition series bolt-on backboard edge padding are for 72" glass backboards. Molded from color matched self-skinning urethane foam in a two-piece design. The exterior of the MBBP-6 edge pads are of a tough molded urethane skin to provide the exterior with a uniform colored appearance. Steel plates shall be molded in the padding to facilitate the attachment of the padding to the backboard with bolts. All attachment hardware shall be within the inherent molded recesses of the pads at the required attachment locations. Interlocking steel pin connectors shall be provided at the match point between the two halves to provide adequate alignment and eliminate sagging of the edge pads underneath the goal.

Packaged in pairs, one pair will complete on backboard. All 3/8" attachment hardware is included.

WARRANTY

MBBP-6 Safe-Pro™ Edge Padding shall be warranted free from manufacturing defects for a period of (8) eight years.

Color Options (Specify): Royal Blue, Navy Blue, Columbia Blue, Gray, Black, Purple, Light Purple, Maroon, Scarlet, Cardinal, Burnt Orange, Orange, Old Gold, Yellow, Kelly Green, Forest Green



PP-66 BASKETBALL POST & GUSSET PADDING



FEATURES:

- > SIZE: 6" x 6"
- > 6' TALL x 2" THICK SQUARE BLACK POST & GUSSET PADDING
- > ATTACHES WITH HOOK-&-LOOK CLOSURE
- > OTHER AVAILABLE SIZES: 6" x 8" (P/N: PP-68), 5" x 5" (P/N: PP-55) & 4" x 4" (P/N: PP-44)



PP-66
BASKETBALL
POST & GUSSET PADDING

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Sheet 1 of 1



FIXED HEIGHT BASKETBALL SYSTEM

Item # 400-AC-FG
400-FA-FG

ASSEMBLING INSTRUCTIONS AND OWNER'S MANUAL



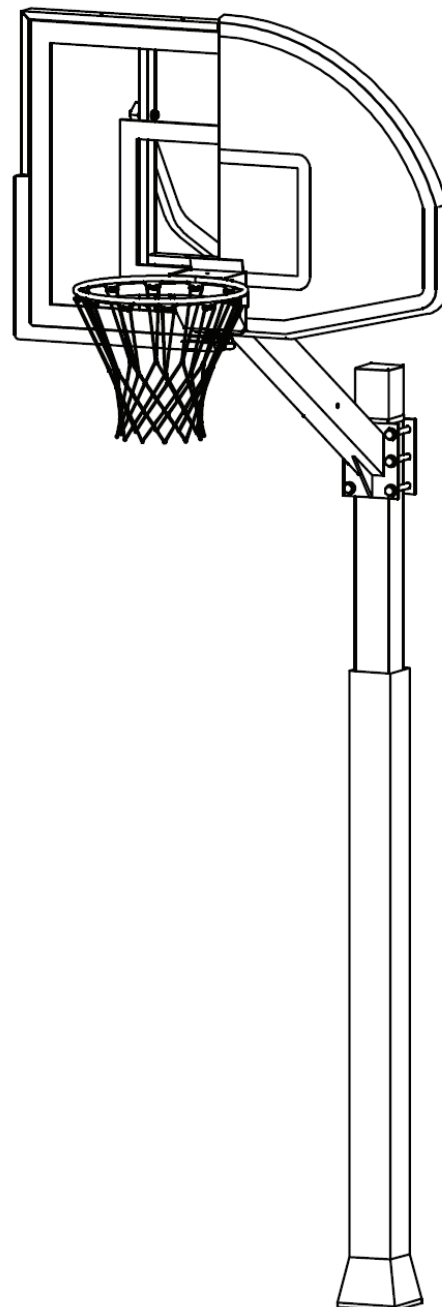
WARNING



FAILURE TO COMPLY WITH ANY OF THE WARNINGS IN THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY.

FAILURE TO COMPLY MAY ALSO RESULT IN PROPERTY DAMAGE. PLEASE HEED ALL WARNINGS AND CAUTIONS TO ENSURE YOUR SAFETY.

DO NOT ATTEMPT TO ASSEMBLE THIS SYSTEM WITHOUT CAREFULLY READING AND FOLLOWING ALL INSTRUCTIONS. BEGIN BY IDENTIFYING AND TAKING INVENTORY OF ALL PARTS USING THE PARTS LIST PROVIDED.



Keep this instruction manual in case you have to contact the manufacturer for replacement parts.

TOOLS AND MATERIALS REQUIRED FOR ASSEMBLY
(Not Included)

- | | |
|--------------------------|--------------------------------|
| 1. 2 Adjustable Wrenches | 10. Concrete-1/2 yard or 14-16 |
| 2. Socket Set | Bags, (80 lb. bags) |
| 3. 9/16" Wrench | 11. Phillips Head Screwdriver |
| 4. 3/4" Wrench | 12. Electric Drill |
| 5. 15/16" Wrench | 13. Carpenter's Level |
| 6. 1/2" Wrench | 14. A minimum of 2 Ladders |
| 7. Hammer or Mallet | 15. Water Supply |
| 8. Tape Measure | 16. Degreaser |
| 9. Shovel | 17. 1/4" Drill Bit |

****A MINIMUM OF SIX ADULTS IS
REQUIRED TO LIFT UNIT INTO PLACE****



BEFORE YOU START



- A. Identify and inventory all parts using the checklist boxes in the parts list. Be sure to keep the hardware bags and their contents separate. If any parts are missing call Our Customer Service Department (800-243-0533).
- B. Test fit all Bolts by inserting them into the respective hole. If necessary, carefully Scrape away any excess powder coating buildup from inside the holes. Do not Scrape away all of the powder coating. Bare metal may rust.



SAFETY INSTRUCTIONS



FAILURE TO FOLLOW THESE SAFETY INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE AND WILL VOID THE WARRANTY. The owner must ensure that all players know and follow these rules to safely operate the system. Proper and complete assembly, use and supervision is essential for proper operation and to reduce the risk of accident or injury. A high probability of serious injury exists if this system is not installed, maintained, or operated properly.

- If using a ladder during assembly, use extreme caution. Follow all warnings and cautions on the ladder carefully.
- 6 people are required to lift the unit into place.
- Before digging, contact the appropriate agency to locate underground power cables, gas, and water lines. Do not install the system within 20 feet of overhead power lines.
- Climate, corrosion, or misuse could result in system failure.
- If technical assistance is required, contact the manufacturer.
- Minimum operational height is 7'6" to the Rim. Most injuries are caused by misuse and /or failure to follow instructions. Use caution when using the system.

Required For This Page:

Shovel, Concrete, Rebar and Tape Measure

****ONLY MINIMUM OF TWO ADULT IS REQUIRED FOR THE FOLLOWING STEPS****

STEP A

NOTE: Before digging, call to locate any buried utility lines.

- Dig a hole 54" deep and 36"x 36" square. The edge of the hole should be flush with the edge of the playing surface. If you live in an area where heavy frost can occur, it may pose a problem, consult your local building inspector to determine the appropriate hole depth.

NOTE: The hole must be at least 54" deep.

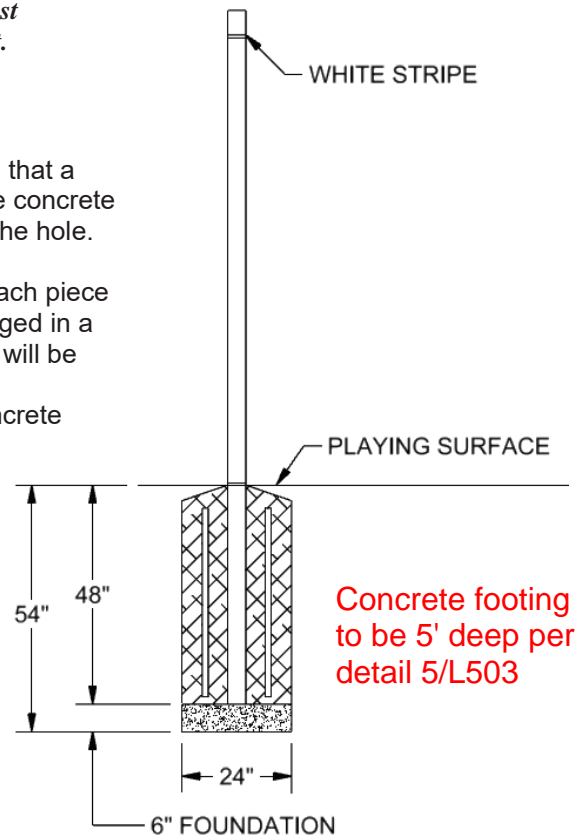
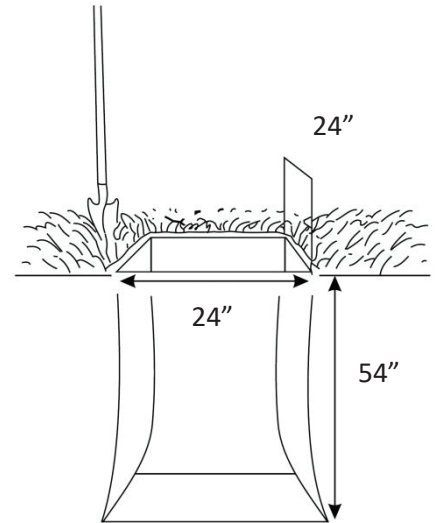
- Build a form before pouring the concrete pad, to ensure that the top of the concrete remains straight and square. The form should be placed about 1/2" above the playing surface to allow for water drainage.
- Bell out the bottom of the hole. And place the foundation using crush stone, concrete pad or bricks that is 6 inches tall.

NOTE: A square hole prevents the rotation of the concrete.

NOTE: The area behind the playing surface must be cleared off by at least 3 feet to enable the user to stand behind the pole to adjust the Rim height.

STEP B

- Mix the concrete according to the instructions on the bags. Note that a thicker mix of concrete will dry stronger than a thin mix. Pour the concrete into the hole, stopping approximately 18 inches from the top of the hole.
- Insert the basketball post 48 inches from the playing surface
- Insert the four pieces of $\frac{3}{4}$ " x 42" Rebar into the hole, pushing each piece firmly to the bottom of the hole. The four pieces should be arranged in a square approximately 8 inches wide so that each piece of rebar will be positioned surrounding the backstop post.
- Finish filling the hole to the top with concrete. The top of the concrete should reach just above the level of the top of the form.



YOU ARE NOW FINISHED WITH THE INITIAL ASSEMBLY STEPS. DO NOT PROCEED WITH THE ASSEMBLY UNTIL THE CONCRETE HAS FULLY CURED. CURING WILL TAKE A MINIMUM OF 72 HOURS. IN HUMID CLIMATES OR WET WEATHER, ALLOW ADDITIONAL TIME FOR THE CONCRETE TO CURE.

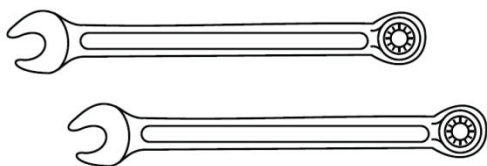


WARNING



NEVER USE THE SYSTEM WITHOUT FOLLOWING THE CEMENTING INSTRUCTIONS. FAILURE TO FOLLOW ALL OF THESE INSTRUCTIONS AND WARNINGS COULD LEAD TO SERIOUS PERSONAL INJURY OR PROPERTY DAMAGE AS LISTED ON PAGE ONE.

Required For This Page:



- HEX HEAD BOLT APPROXIMATELY 6" - 7" LONG WITH WASHERS, LOCK WASHERS AND HEX NUT. (SET OF 6)
- BACK POST PLATE
- EXTENSION ARM WELDMENT
- HEX HEAD BOLT APPROXIMATELY 3" LONG WITH WASHERS, LOCK WASHERS AND TWO HEX NUT. (SET OF 4)



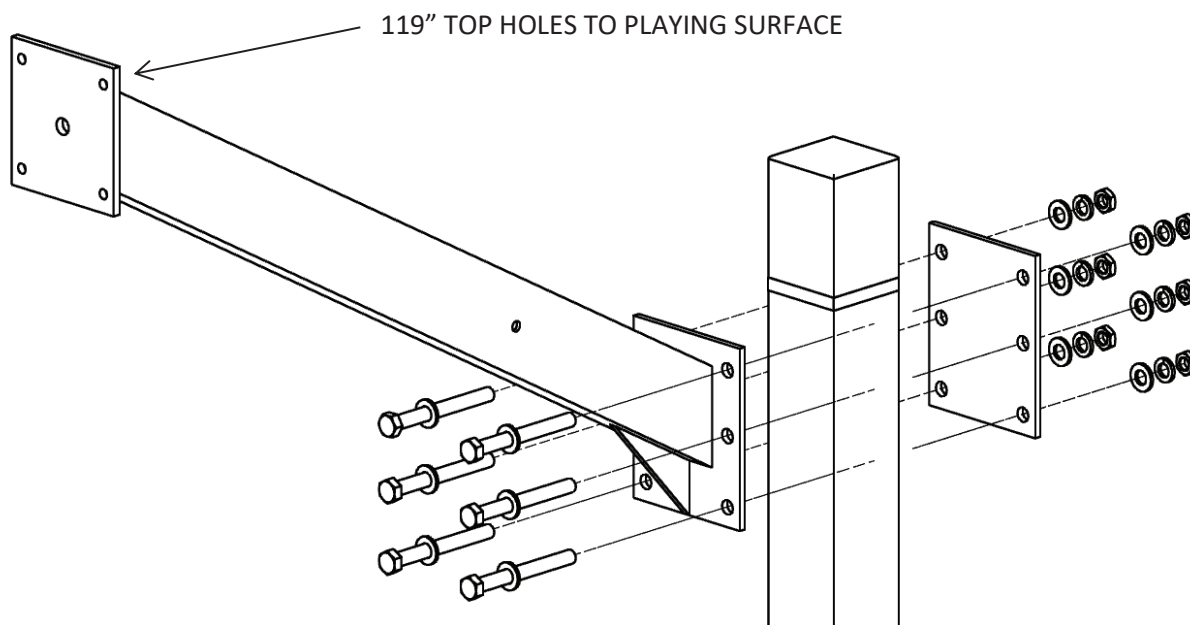
WARNING



BECAUSE OF THE SIZE AND WEIGHT OF THE SYSTEM, A MINIMUM OF THREE ADULTS ARE REQUIRED FOR THE FOLLOWING STEPS

STEP 1

- Position the extension arm and back post plate to the post near the white stripe.
- Using the longest hex head bolt to tie the two item mention above using the hardware as shown below. **DO NOT OVER TIGHTEN!**
- Set the top holes in the plate to 119 inch to the playing surface.



STEP 2

- Assemble the 5 inch by 5 inch hole pattern backboard to extension arm weldment 5 inch by 5 inch hole pattern.
- Using the 4 sets of hex head bolt that fits the 5 inch by 5 inch hole pattern. Order of main part is rim, gasket, backboard and extension arm weldment, tie four items using the hex head bolt with washer thru rim and gasket. Into the backboard nut in the 5 inch by 5 inch hole pattern, use a hex nut to hold the rim and gasket to the backboard. Then lift the backboard on to the extension arm weldment 5 inch by 5 inch hole pattern. Finish this off with washers, lock washers and hex next, repeat till all four set of hardware is securely on (see figure 1&2).

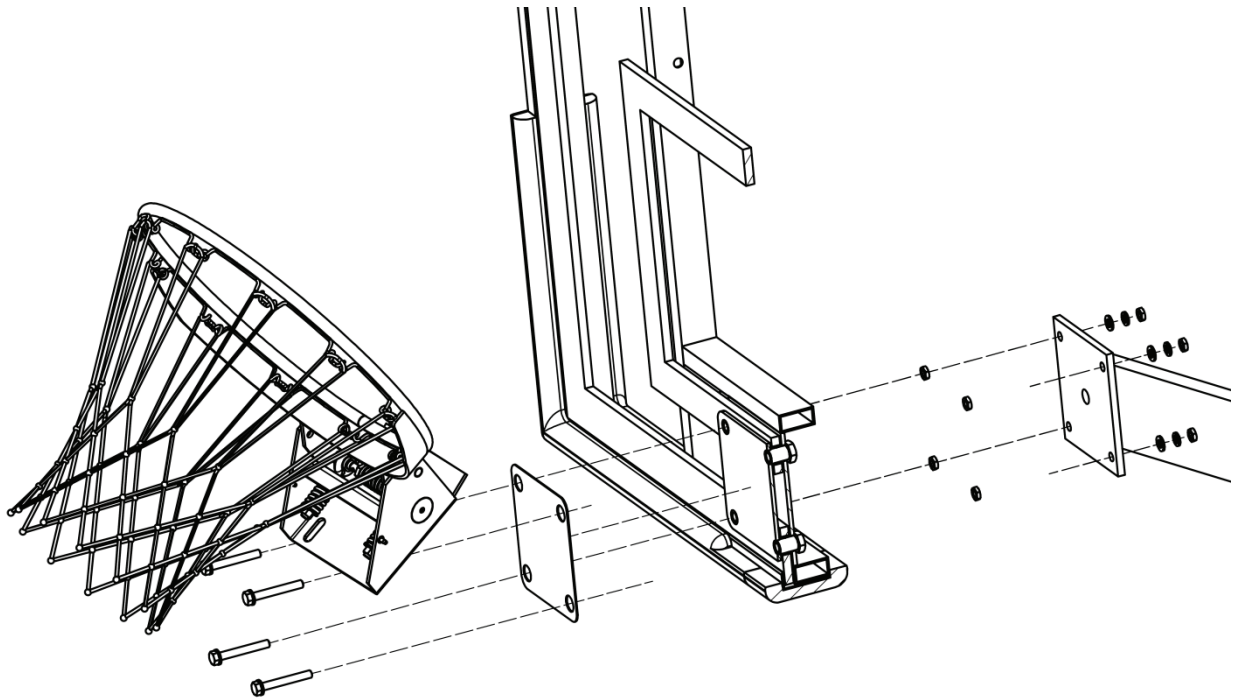


Figure 1 (Rectangular Backboard)

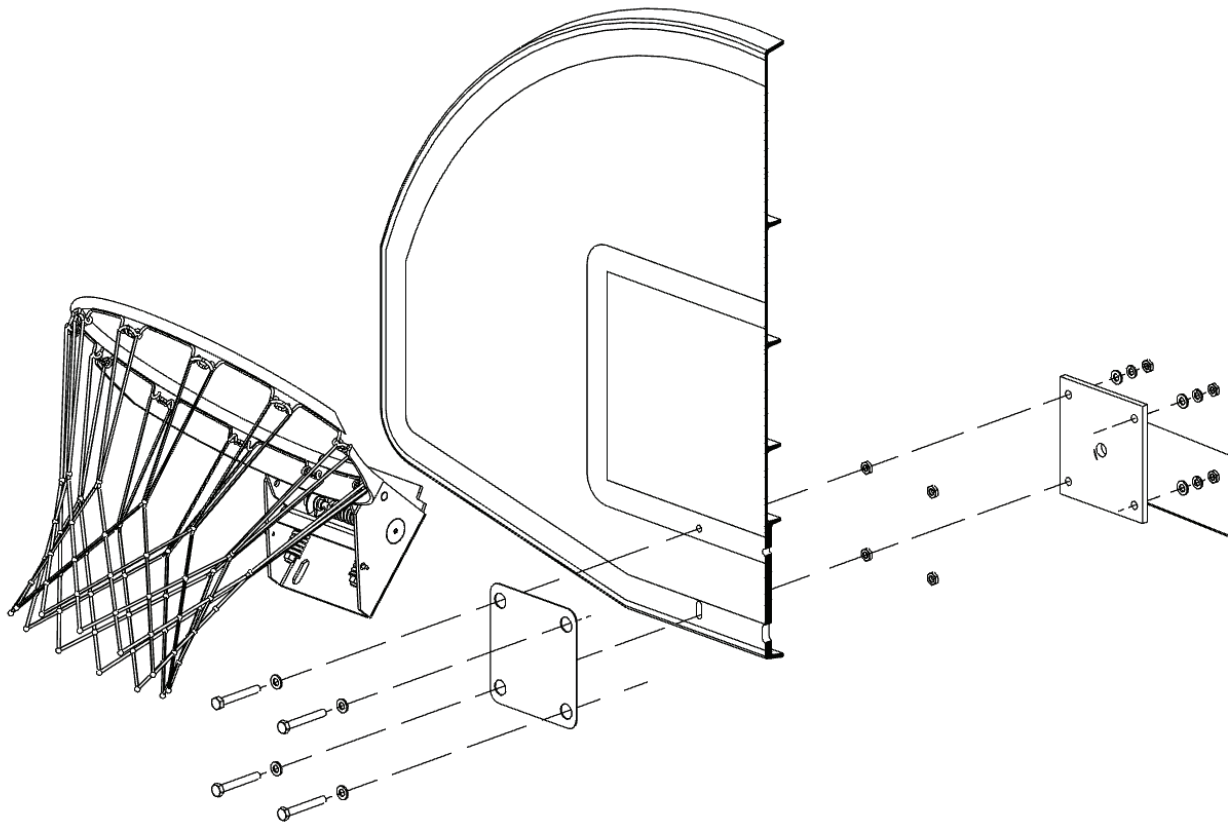


Figure 2 (Fan Backboard)

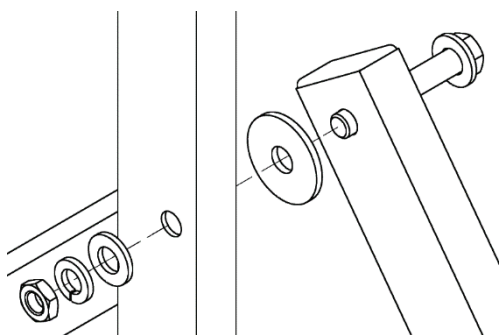
Required For This Page: (Optional For Rectangular Backboard)



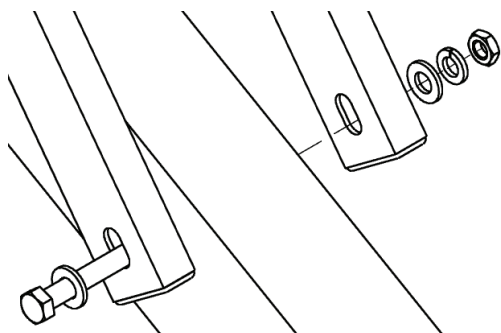
- HEX HEAD BOLT APPROXIMATELY 6" LONG WITH WASHERS, LOCK WASHERS AND HEX NUT. (SET OF 1)
- SUPPORT ARMS (SET OF 2)
- HEX HEAD BOLT APPROXIMATELY 3" LONG WITH TWO WASHERS, BLACK FENDER WASHER AND LOCK NUT. (SET OF 4)

STEP 3 (Optional For Rectangular Backboard) Note: The Fan Shape Backboard does not require braces.

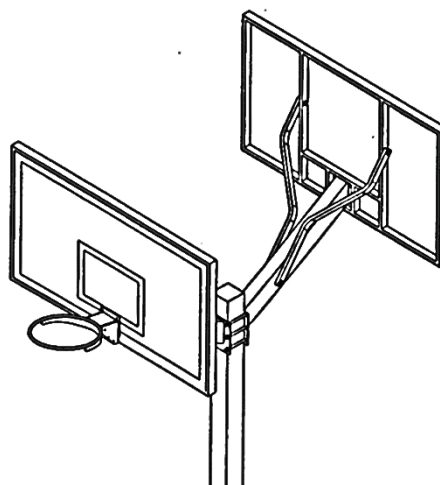
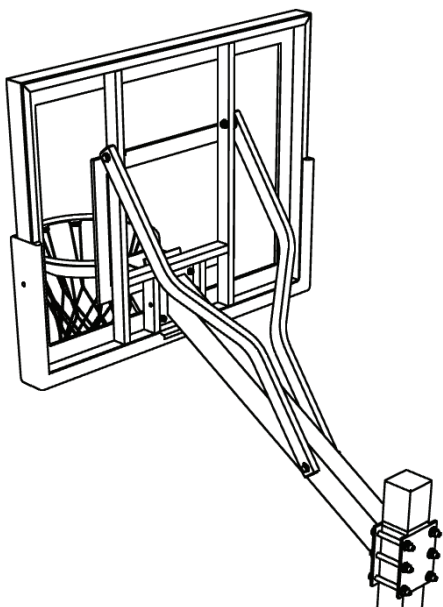
- a. Assemble support arms to extension arm weldment. Note slots in support arms goes on the extension arm weldment and holes on the other end goes for the backboard hardware.



← Backboard and Support arm



← Extension arm weldment and Support arm



Two backboards can be assembled on a pole as shown.



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